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Significant indicators of intent to leave among army dental corps junior officers

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SIGNIFICANT INDICATORS OF INTENT TO LEAVE AMONG ARMY DENTAL CORPS JUNIOR OFFICERS

by

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CERTIFICATE OF APPROVAL

MASTER'S THESIS

This is to certify that the Master's thesis of

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has been approved by the Examining Committee
for the thesis requirement for the Master of Science degree
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To Alejandra, Deise, and Elham

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CHAPTER 1

INTRODUCTION

The Army, Air Force, and Navy Dental Corps, which are responsible for providing quality dental care to this Nation's Soldiers, Sailors and Marines, were not able to meet their recruiting quotas for new dentists from 2001-2008. Once recruited, the Armed Forces fail to retain dental officers (General Accounting Office briefing to Congressional Committees (GAO -0-469R, April 16th, 2009). The most affected of the Armed Services has been the United States Army Dental Corps, which assumed the brunt of multiple deployments to Iraq and Afghanistan. Of the 1.3 percent of dental students who choose government service as a career path (Chmar et al. 2007, p.1245) few may choose to join or stay in the Army Dental Corps where prospects of deployments to Iraq or Afghanistan are foremost in their mind. In a 2007 Government Accounting Office (GAO) report to Congress, the Army Dental Corps projected a forty-nine percent shortfall in the projected end strength filled positions for the grade of major (GAO-7-224, January, 2007). The economic recession has yet to demonstrate an increase in the percentage of dental graduates seeking employment in the federal sector. The 2008 ADEA Survey of Dental School Seniors (Okwuje, I. 2009) revealed that similar to previous years over 50% of graduating seniors planned to enter the private sector while only 6% planned to enter government service. The resulting workforce crisis in the federal sector may compromise access to care for our Nation's Soldiers. Consequently, the Army, the Army Medical Department (AMEDD) and the United States Army Dental Corps leadership are heavily invested in seeking strategies to recruit and retain dental officers.

In their recruiting and retention strategies, the Army has assumed that student debt and compensation are the dominant drivers for meeting recruitment and retention requirements. While dental student debt is substantial for most dental students, its importance in 1) choosing a career path and 2) retention in the Army Dental Corps is

questionable. The 2006 ADEA Survey of Dental School Seniors suggests that debt is not a major influence in the choice of career paths for graduating seniors. Although a majority of dental school seniors considered their educational debt to be a burden, only 22 percent of seniors reported that educational debt played a major role in determining their plans following graduation. Forty-two percent reported debt had "little" or "somewhat" of an influence and the remaining 36.4 percent reported educational debt had no influence on their plans immediately following graduation (Chmar et al, 2007). It appears that even though educational debt may be a burden to dental students, educational loans, grants, scholarships, and loan repayment programs may reduce the impact of that burden on post graduation practice plans. As a result, the literature is inconclusive regarding the impact educational debt contributes to career path choices immediately after graduation.

As stated previously, many of the recruiting and retention initiatives for the military service have focused on financial incentives to reduce the educational debt burden of dental students. Recruitment of dental officers is linked inextricably with the retention of dental officers as it provides the pool of officers to be retained. However, because the Army Dental Corps and the United States Army Recruiting Command (USAREC) have been more successful at meeting recruitment goals for dental officers than retention goals, this thesis will focus solely on retention.

Historically, the Army has focused its retention efforts on initiatives that were easy to measure and change, such as: loan repayment programs, acceptance into prestigious residency training programs and special pay packages. However, such measures may fail to address the changing demographics, generational values and motivational factors that may be significant indicators for the retention of junior officers. There is a wealth of governmental reports and other published literature that examines other factors associated with the retention of junior officers in general. This literature examines issues such as: deployment; (Fricker, 2002; Badger 2004; Henning, 2006;

Quester et al, 2006); family factors (Vernez & Zellman, 1987); pay (Lakhani. 1988; GAO.NSIAD-99-197BR, August 1999); benefits (GAO-02-557T, 1999; GAO 10-561R, 2009); organizational commitment; morale (Langkamer & Ervin, 2007); promotional opportunities, job satisfaction (Beck 2005); supportive management/job quality (Payne & Huffman, 2005; Durpre & Day, 2007) and stabilization of assignments (GAO-01-841, August, 2001; Lytell & Drasgow ,2009). In contrast, the published research pertaining specifically to the retention of Army Dental Corps junior officers is less robust.

The purpose of this study was to identify the statistically significant predictor variables associated with Army Dental Corps junior officers' intent to leave the military prior to retirement. This study was conducted by completing a secondary data analysis of the 2009 Army Dental Officer Retention Survey (Appendix A). Based on the findings from this study strategies were identified to improve retention among junior officers in the Army Dental Corps.

CHAPTER 2

LITERATURE REVIEW

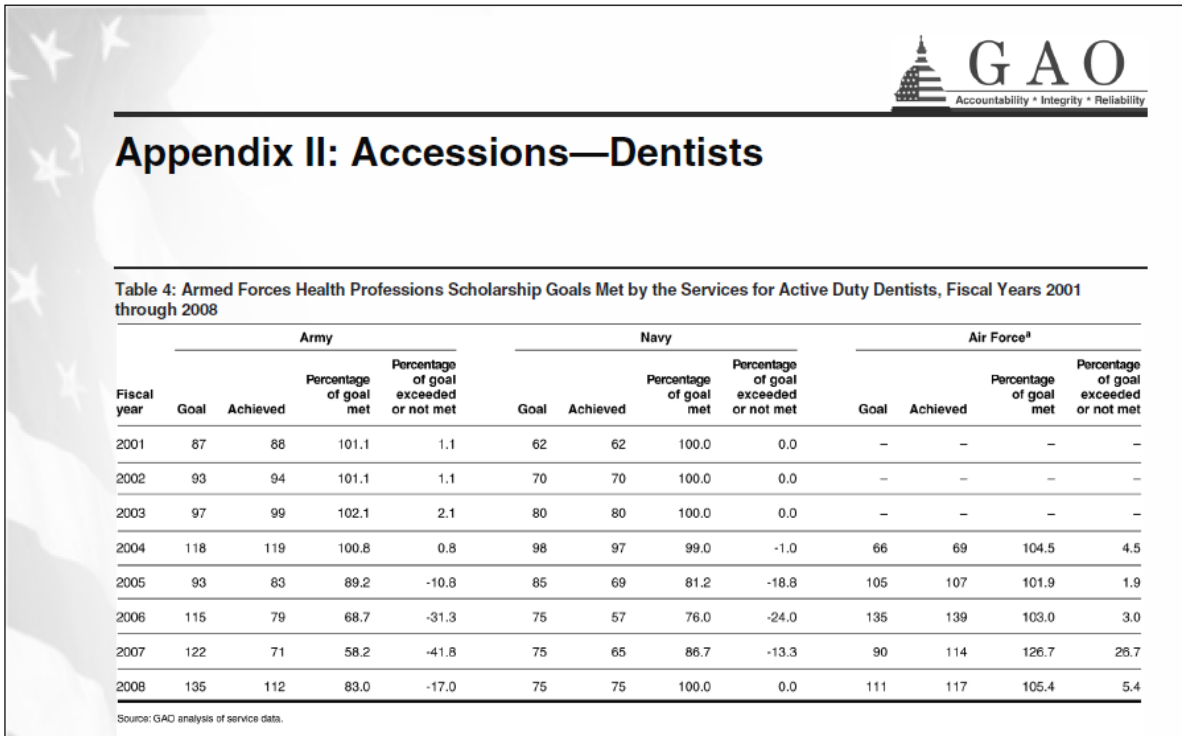
The Problem

In the current time of economic recession, it is difficult to imagine that the Army Dental Corps has a workforce problem. Among enlisted personnel (private through command sergeant major) in the United States Army, the number of enlistments and re-enlistments has increased. The Department of Defense announced in March 2010 that the Army had achieved and surpassed its goal of new enlisted recruits (102%) for the month of February and exceeded their re-enlistment goals (DOD press release, March 18 2010). This is most likely due to poor job alternative prospects (GAO-09-256, May 2009). In contrast, the Army Dental Corps has had a difficult time recruiting new dentists to fill its ranks. Between 2005-2008, the United States Army Recruiting Command was unable to meet is recruiting goals for Health Professional Scholarship Program (HPSP) students (Figure 1) and direct accession dental officers (dentists not already obligated as a result of HPSP/ROTC scholarships; Figure 2). Furthermore, between 2001- 2008, the Army Dental Corps was unable to meet its retention goals for junior officers (Figure 3). In fact, a 2007 GAO report (GAO-7-224, January, 2007) projected a 49% shortfall for dentists in the rank of major, which represented the most severe shortage among any specialty in the Army (Figure 4).

While the Navy and Air Force have had similar issues with recruitment and retention, the Army's recruitment and retention have been compounded by the United States' reliance on the Army for fulfilling its missions in Iraq and Afghanistan. The substantial growth of the Army, as well as the lowering of recruiting standards (lower socio-economic standard) for enlisted personnel, has increased the need for Army dentists. In other words, there are more Soldiers to treat, many of whom have more dental needs than prior recruits.

Historically, the military has had difficulty recruiting and retaining dental officers (GAO-0-469R report, April, 2009). The events of 9/11 and the subsequent wars have compounded the Army Dental Corps' recruitment and retention problem. Within the civilian workforce, the dentist to population ratio is expected to decline (2008 American Dental Association Dental Workforce Model: 2006-2030) thus creating a civilian workforce shortage. As more civilian positions become available, fewer dental school graduates may choose to enter the Army, and those who enter the Army Dental Corps may not choose to stay past their initial obligation. Consequently, it is important to understand what variables are associated with intent to leave so that policies can be developed to help minimize turnover.

Figure 1: Dental Corps Scholarship Accessions 2001-2008



GAO
Accountability * Integrity * Reliability

Appendix II: Accessions—Dentists

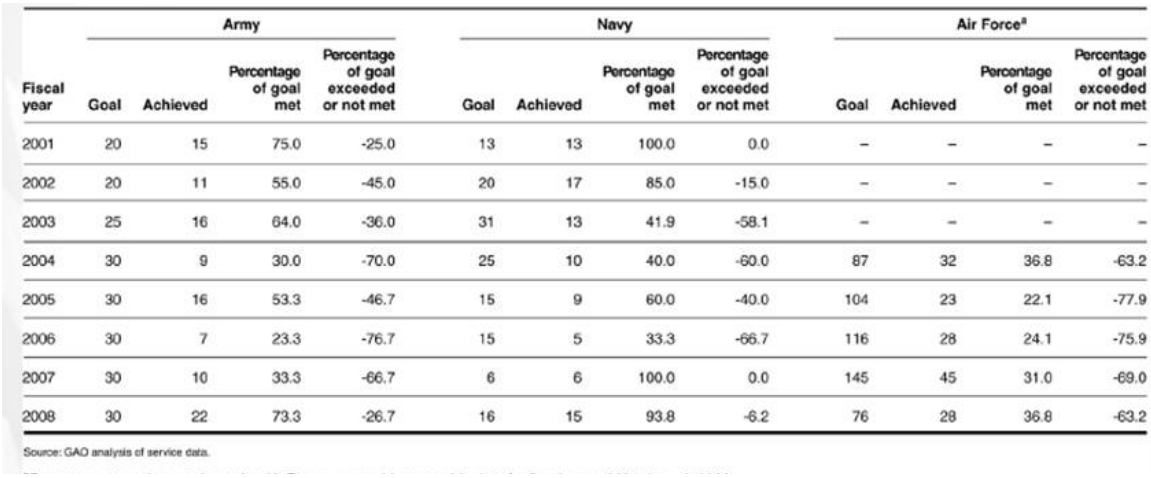
Table 4: Armed Forces Health Professions Scholarship Goals Met by the Services for Active Duty Dentists, Fiscal Years 2001 through 2008

	Army				Navy				Air Force[a]			
Fiscal year	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met
2001	87	88	101.1	1.1	62	62	100.0	0.0	–	–	–	–
2002	93	94	101.1	1.1	70	70	100.0	0.0	–	–	–	–
2003	97	99	102.1	2.1	80	80	100.0	0.0	–	–	–	–
2004	118	119	100.8	0.8	98	97	99.0	-1.0	66	69	104.5	4.5
2005	93	83	89.2	-10.8	85	69	81.2	-18.8	105	107	101.9	1.9
2006	115	79	68.7	-31.3	75	57	76.0	-24.0	135	139	103.0	3.0
2007	122	71	58.2	-41.8	75	65	86.7	-13.3	90	114	126.7	26.7
2008	135	112	83.0	-17.0	75	75	100.0	0.0	111	117	105.4	5.4

Source: GAO analysis of service data.

Source: GAO 09-469, April 2009 reprinted with permission U.S. Government Accountability Office.

Figure 2: Dental Corps Direct Accessions 2001-2008

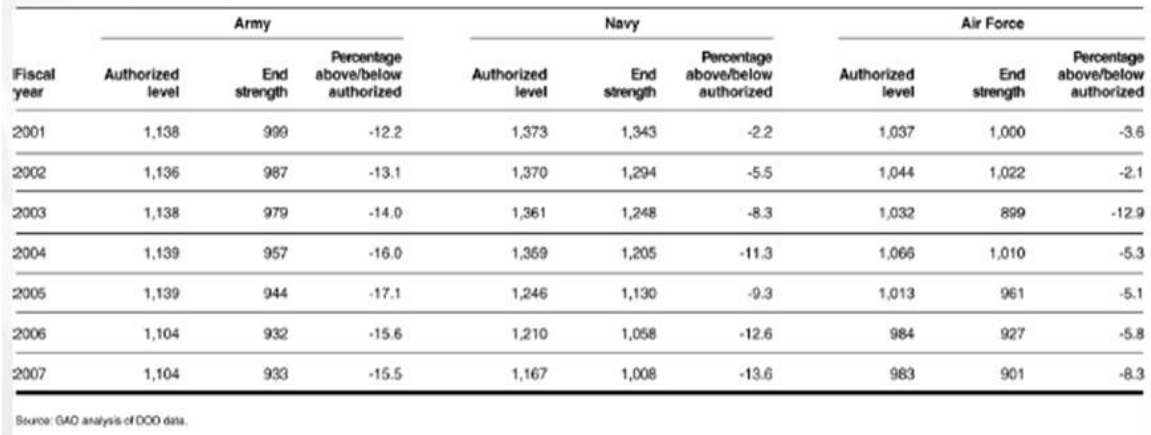


Fiscal year	Army				Navy				Air Force[a]			
	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met	Goal	Achieved	Percentage of goal met	Percentage of goal exceeded or not met
2001	20	15	75.0	-25.0	13	13	100.0	0.0	–	–	–	–
2002	20	11	55.0	-45.0	20	17	85.0	-15.0	–	–	–	–
2003	25	16	64.0	-36.0	31	13	41.9	-58.1	–	–	–	–
2004	30	9	30.0	-70.0	25	10	40.0	-60.0	87	32	36.8	-63.2
2005	30	16	53.3	-46.7	15	9	60.0	-40.0	104	23	22.1	-77.9
2006	30	7	23.3	-76.7	15	5	33.3	-66.7	116	28	24.1	-75.9
2007	30	10	33.3	-66.7	6	6	100.0	0.0	145	45	31.0	-69.0
2008	30	22	73.3	-26.7	16	15	93.8	-6.2	76	28	36.8	-63.2

Source: GAO analysis of service data.

Source: GAO 09-469, April 2009 reprinted with permission U.S. Government Accountability Office.

Figure 3: Dental Corps Officer End Strength 2001- 2008



Fiscal year	Army			Navy			Air Force		
	Authorized level	End strength	Percentage above/below authorized	Authorized level	End strength	Percentage above/below authorized	Authorized level	End strength	Percentage above/below authorized
2001	1,138	999	-12.2	1,373	1,343	-2.2	1,037	1,000	-3.6
2002	1,136	987	-13.1	1,370	1,294	-5.5	1,044	1,022	-2.1
2003	1,138	979	-14.0	1,361	1,248	-8.3	1,032	899	-12.9
2004	1,139	957	-16.0	1,359	1,205	-11.3	1,066	1,010	-5.3
2005	1,139	944	-17.1	1,246	1,130	-9.3	1,013	961	-5.1
2006	1,104	932	-15.6	1,210	1,058	-12.6	984	927	-5.8
2007	1,104	933	-15.5	1,167	1,008	-13.6	983	901	-8.3

Source: GAO analysis of DOD data.

Source: GAO 09-469, April 2009 reprinted with permission U.S. Government Accountability Office.

Figure 4:- Projected Percentage of Overfilled and Underfilled Positions for Major in Specified Specialty Areas in FY 2007

Table 11: Army's Projected Percentages of Overfilled and Underfilled Positions for Majors in Specified Specialty Areas in FY 2007

Basic branch	Percent
Infantry	107
Armor	99
Finance	98
Special forces	97
Adjutant general	96
Ordnance	88
Quartermaster	86
Signal corps	84
Field artillery	79
Aviation	77
Military police	76
Chemical	75
Engineer	74
Military intelligence	73
Air defense	66
Transportation	48
Total	**81**

Special branch	Percent
Medical doctor	99
Chaplain	91
Army nurse	86
Medical service	82
Veterinary corps	78
Judge advocate	72
Medical specialist	67
Dentist	49
Total	**85**

Source: GAO analysis of Army data.

Source: GAO-07-224, January 2007 reprinted with permission U.S. Government Accountability Office.

Retention/Turnover Defined

Webster's Dictionary defines retention simply as "being retained" (Webster, 2008). In the military and the civilian sector, the definitions and measurements of retention are not this simple. A review of the civilian and military research literature on employee/military retention reveals the use of multiple terms. The synonym ring[1] for employee retention from a web search may include the terms: employee attrition, employee turnover,

1 In metadata a Synonym ring or synset, is a group of data elements that are considered semantically equivalent for the purposes of information retrieval.

employee intent to stay, employee intent to leave, "quitters", "leavers", "stayers" continuation, and job tenure. The most accepted term in the literature relating to employee retention is "turnover." Price (1977) perhaps coined the simplest definition of "organizational turnover" by defining it as "the degree of individual movement across the membership boundary of an organization." This definition implies there is movement into and out of an organization as defined and measured by accessions and separations respectively. Even though this study will not address recruiting in depth, we shall adopt Price's term "turnover" as our operational definition as it is the most neutral in its perspective.

Measuring and Reporting Turnover

In their comprehensive review of nurse turnover, Hayes et al. (2006) summed up the frustration for researchers: "Methodological challenges have plagued researchers when attempting to measure and compare turnover across diverse health care systems. Even at the local level, the lack of consistency in how records of turnover are maintained presents difficulties, as the reliability of turnover determinations varies according to record keeping methods." Interpreting Department of Defense (DOD) statistics is equally as challenging since the Navy, Air Force, Army and Marines use different collecting, tracking and reporting mechanisms. In fact, the United States Government Accountability Office (GAO) in a recent report noted, "we obtained and analyzed accessions and continuation data from the DOD's Defense Manpower Data System, but our assessment of the data's reliability identified incorrect information that was severe enough to prevent those data from being used for this report "(GAO-07-224, January,2007).

In the Department of Defense (DOD), retention is a measurement that refers to the rate at which military personnel voluntarily choose to stay in the military after their original obligated term of service has ended. The Army reports attrition rates, rather than

retention rates for enlisted personnel and continuation rates for officer personnel. This is problematic because attrition rates and continuation rates reflect a passive stance on the issue of retention. In other words, measuring attrition rates happens after an officer has already left the Army, thus changes cannot be made to help retain people who have already departed the service. Concerned leaders of the various branches of the Army, especially in the Army Medical Department (AMEDD), prefer to conduct surveys within their specific Corps (e.g. Dental Corps, Medical Corps, Nurse Corps, Vet Corps, etc) to assess officers' intent to stay/intent to leave and implement changes based on feedback from the responses. Such policy actions may influence, and hopefully reduce, attrition rates. These surveys, despite not always utilizing the accepted causal models for turnover analysis, have been instrumental in getting Army, DOD and sometimes Congressional support to implement certain policies that have enhanced recruiting and retention.

It is difficult to compare studies pertaining to employee turnover in the civilian work sector because many terms are used interdependently or defined differently (e.g. as a predictor variable for one study and a dependent variable in other studies). For example in some studies, "intent to leave" is the dependant variable, and in other studies, "intent to leave" is used as an intervening independent variable. For this study, "intent to leave" was used as the dependent variable.

Comparing Statistical Results across Studies

As research on turnover has evolved, the statistical methods employed by authors for analyzing the data and reporting the statistical results have also changed. Much of the early research reported tests of significance (p- values) to assess whether their findings were significant predictors of turnover. Recent research has reported effect size. Cohen (1988) defined effect size as "the degree to which the phenomenon is present in the population or the degree to which the null hypothesis is false." Richardson (1996) describes two types of effects sizes: 1) indices that reflect the standardized differences

between group means and 2) indices that reflect the percent of variance accounted for. Breaugh (2003) further categorized indices by the type of independent variable (i.e. dichotomous, continuous) and dependent variable (i.e. dichotomous, continuous) being measured. Understanding what is being measured, who is being measured, how it is measured, and how it is reported is critical for interpretation of results.

Cotton and Tuttle (1986) published a comprehensive meta-analysis on employee turnover in which they noted that results across studies varied widely based on sample size, the population being studied, and the presence of moderating variables. Similarly, Griffeth et al. (2000) concluded "effect sizes of nearly all determinants, including the direction of their effects can vary widely across situations and populations." For this reason, this literature review emphasizes the results from meta-analyses because authors generally corrected for measurement errors and variances in reporting effect sizes for determinants of turnover.

The Importance of Turnover

Turnover is important because it is costly to organizations. The cost of turnover includes both the dollar amount to recruit and train new employees and the loss in intellectual capital for the organization (Griffeth & Hom, 2001; Cascio, 2000). Furthermore, high turnover rates reduce an organization's efficiency, impacts productivity and have been shown to affect access and quality of care in medicine (Griffeth & Hom, 2001; Kay & Stoller, 2004). Turnover is not always a negative event, but in professions where manpower shortages reduce and restrict an organization's ability to recruit replacement employees, turnover is rarely a positive phenomenon. (Meier & Hicklin, 2007)

Surveys conducted by the Army Dental Corps indicate a majority of the junior officer Army trained specialists will depart the service after fulfilling their residency pay-back time (Mazuji et al., 2005; Chaffin et al, 2008). The Army invests a significant

amount of resources and time to educate general dentists in the various specialties. An unpublished thesis for the Navy War College (Stacy, 2006) estimated that the Navy spent approximately $653,812 to train endodontic specialists in their residency programs. The return on investment for the military is minimal if an officer only completes their post training obligation. The total cost to the Army of turnover among junior officers in the Dental Corps has not been published, and it may not have ever been estimated.

Models of Turnover

The literature pertaining to turnover research is vast. Many of the original proposed models show little resemblance to later models. Indeed, more recent models related to the theory of turnover of individual and corporate behaviors have uncovered more complex linkages between proposed determinants and turnover. There has been much debate in the literature about the significance of the determinants of turnover as well as a model's generalizability based on sample size, effect size, sample population, homogeneity of the sample population, measurement tools and statistical analysis of the data. In their critique of research on turnover, Price and Mueller (1981) concluded: "The different models vary greatly in the variables they emphasize, and variables deemed of major importance in one model are not even cited in other studies. This lack of inclusiveness has made it impossible to assess accurately the relative importance of the various determinants of turnover." Prominent researchers in the field of turnover research seem to agree on one principle: that turnover is a dynamic process, as dynamic as the organizations and individuals they attempt to study. As a result, many models to explain and predict turnover have evolved, and the literature indicates turnover models will continue to evolve. To illustrate the evolution of turnover models the evolution of one model, the Price Model of Causation, will be reviewed. There are several models which are equally as appropriate for historical analysis. However, the evolution of the Price and Mueller model was chosen because Price's (2001) most recent 'Causal Model

of Turnover' (2001) is the one that was used as a starting template in this exploratory analysis of turnover among junior officers in the military. Additionally, Price and Mueller, and their graduate students, have been among the most prolific in the research and publication of turnover studies, thus making it easier to describe the evolution of turnover models. Because Price and Mueller credited other contemporary authors for their contributions to turnover models, it is easy to follow the development of the derivations of determinants and antecedents of turnover. Price and Mueller presented not only their models, but also the assumptions and propositions on which they were based. The development of the "Causal Model of Turnover" provides a fascinating case study on how models evolved as assumptions changed with increased knowledge and research on the sociological, psychological, economical and statistical foundations on which they were based. In tracing this evolution, the most recent historical accounting of this process, as detailed by James Price and published in Hom and Griffeth's (2004) comprehensive anthology of research on turnover, will be used.[2]

Evolution of the Price and Mueller Model

Price's Causal Model of Turnover (2001) is the most current of his proposed models published in the literature (Griffeth & Hom, 2004). This model evolved over a thirty year period. The research into the Causal Model began in the early 1970's by Price and Mueller. Though the model has been labeled throughout its evolution as the "Price and Mueller" model, Price is careful to credit his peers who proposed different models in turnover, components, of which he incorporated into his later models (Mobley, 1982; Mowday, Porter and Steers, 1982; and Hom & Griffeth, 1995). Price describes the evolution of his most recent model as a phased approach spanning several decades and

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[2] Price published an entire Chapter (1) in Griffeth's and Hom's book, Innovative Theory and Empirical Research on Employee Turnover (2004). Direct quotes from his chapter are annotated by quotations when appropriate and page numbers cited.

five major phases (preliminary causal model (1972); pilot study- University of Iowa hospital study (1973-75)[3]; Iowa-Illinois study (1976-77); Denver study(1980-81); and Wilford Hall study (1990). The following paragraphs describe the major modifications to the original model, the justification for change, and the outcomes in terms of significant predictor variables and the total effects explained by the model.

Price and his graduate students offered the preliminary model after a review of the contemporary turnover literature from 1972-73. Price published his first model on turnover in a 1975 anthology, Labor Turnover and Retention (Pettman, B, Ed., 1975). In this work he developed a preliminary model that included four exogenous variables (i.e. pay, primary group, communication and centralization) and two intervening variables (i.e. job satisfaction and opportunity). He excluded five determinants (i.e. role clarity, programmed coordination, inequity industrial concentration and size) because of "insufficient evidence." In 1976, Bluedorn, one of Price and Mueller's graduate students, validated certain aspects of the Price model and added opportunity as an intervening variable.

In The Study of Turnover (1977), Price revised his earlier turnover model. He expanded communication into two distinct processes: formal and instrumental. He also relabeled "participation in primary groups" or "kinship-type" groups as "integration." He excluded five determinants based on weak or inconsistent support in the literature: routinization, professionalism, upward mobility, distributive justice and size of the organization. In total, five determinant variables (i.e. pay, integration, instrumental communication, formal communication, centralization) and two intervening variables (i.e. opportunity, satisfaction) were included. In reviewing the literature for his book, The Study of Turnover, Price was convinced that two variables formerly excluded,

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[3] Dates in parenthesis for these phases indicate dates of research and data collection and do not equate to date of published findings

routinization and distributive justice, should be added to the model. A review of theses and dissertations published by Price's graduate students indicated that routinization proved to be a significant determinant of turnover (Dickson, 1977), as did distributive justice (Martin, 1977).

In 1979, Price and Bluedorn revised the model based on contemporary research as well as results from studies from graduate students at the University of Iowa. The model incorporated determinants of turnover that were excluded in earlier models but had subsequently been found to be significant predictors or antecedents of turnover. These variables included: work commitment, social class, community participation, professionalism and centralization. When the model was pilot tested among a small study of nurses at the University of Iowa (1973-1975), the determinants for turnover, in general, 'provided expected results' with total effects reported for the most important determinants cited by Price (2004) as: satisfaction (.30), professionalism (.26), integration,(-.24), pay (-.29), distributive justice (-.23) and routinization (.15). Price (2004) noted that satisfaction increased turnover which was an unexpected result. He concluded that factors such as union influence and kinship responsibility moderated the influence of satisfaction on turnover. The study (1973-1975) also found that non-local nurses were more likely than local nurses to quit their jobs when their husbands finished their education and training to seek jobs elsewhere.

As a result of research conducted at the University of Iowa and elsewhere, four substantial changes were made to the model (1976-1977). Price (2004) summarized the significant changes: 'opportunity was changed from a moderating variable to an exogenous variable' and 'promotional opportunity; general training and kinship responsibility were added as exogenous variables'. Furthermore, he explained 'intent to stay was added as an intermediate variable between satisfaction and turnover' based on work by Mobley (1982). Mobley (1982) and others who studied turnover "legitimized the use of intent to stay/intent to leave as a valid predictor of turnover" (Price, 2004).

Such a predictor made the study of turnover palatable for Price's doctoral and master's students who did not "relish the idea of waiting for the actual attrition of employees to validate or invalidate determinants of their proposed models for their dissertations" (Price, 2004). Results from the Iowa-Illinois study (1976-1977) demonstrated the most important predictors of turnover and the total effects for the model were: intent to stay (-0.37), opportunity (0.16), general training (0.13), satisfaction (-0.10), and kinship responsibility (-0.07) (Price, 2004). After assessing results from the Iowa-Illinois study, Price and Mueller decided modifications to the model were warranted, and this model was tested on nurses in five Denver hospitals (1980-1981).

The revised Price and Mueller model was tested on a substantially larger population of nurses and has been referred by Price and Mueller as "the Denver study." While most of the variables and propositions remained the same, four major changes were made: 1) intent to leave replaced intent to stay; 2) participation was changed to centralization; 3) commitment was added as an intervening variable between satisfaction and intent to leave, based on research by Mowday et al. (1982) and 4) organizational size was added as an exogenous variable. Role overload was also added as a variable based on feedback from nurses and research supporting its inclusion. "Six determinants demonstrated a substantial effect on turnover: intent to leave (0.32), satisfaction (-0.11), pay (-0.09), kinship responsibility (-0.08), opportunity (0.07), and integration (-0.07) (Griffeth & Hom, 2004). However this model only explained 12 % of the variance. Because the sample was mostly female, Price and Mueller wanted to sample a more heterogeneous group. They found a good opportunity at one of the largest Air Force hospitals in the United States, Wilford Hall Medical Center, San Antonio, Texas.

"Eleven determinants remained essentially the same in the Wilford Hall study. Centralization became autonomy, and intent to leave became intent to stay" (Price, 2004). Price states they used intent to stay instead of intent to leave as the dependent variable in the military study because a significant portion of the sample populations had a

contractual obligation payback period for their education, and the researchers had no desire to wait up to six years for turnover data

Price and Mueller made nine major changes in the Wilford Hall model (Price, 2004). "Work commitment" was reintroduced as job motivation based on work by Kanugo, (1982). "Met expectations" was added due to work by Mowday et al., (1982). Positive and negative affectivity were added based on work by Brief et al. (1988). Job hazards were added from research by Viscussi (1979). Role overload was expanded to job stress. Based on the work by Mangelsdorff (1989), Price and Mueller added professional growth. Integration became a component of social support, which originated from research published by House (1981). Search behavior was introduced as a variable. Finally, "values" was incorporated as a moderating influence based on the importance of values published in turnover research at the time (Price, 2004).

Price (2004) reported that six determinants had substantial total effects in the Wilford Hall study: commitment (0.42), satisfaction (0.23), search behavior (-0.23), opportunity (-0.19), met expectations (0.16), and positive affectivity (0.12). His proposition for using a more heterogeneous population was based in the insignificance of kinship responsibility in this population as opposed to the high significance of this variable in the prior studies, which had been mainly female. Job hazards was not proven to be a significant determinant. The model, with demographic variables included, explained 41% of the variance (Price, 2004).

The Price and Mueller Causal Model of Turnover (2001)

The culmination of Price and Mueller's[4] lifelong research is illustrated in Figure 5. The model consists of thirteen exogenous variables[5] (two of which Price defined as

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[4] Dr. Charles Mueller went on to pursue other academic interests in the late 90's, and Price continued his research on turnover until his death in 2008. Dr. Mueller, as Professor Emeritus-University of Iowa, still teaches, and his current research involves the study of the gender paradox in job satisfaction

environmental variables),[6] four individual variables,[7] and seven structural variables.[8] In addition, Price included four intervening endogenous variables.[9,10] Demographic variables[11] are not included in the model. According to Price, the model should not be interpreted that all exogenous variables impact turnover through job satisfaction, organizational commitment, search behavior and intent to stay. Rather Price believed that there were multiple paths from exogenous variables to turnover. He explained the sequence of exogenous variables to turnover was not rigid.

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[5] Exogenous variables are defined as those independent variables which affect a model but are not affected by it.

[6] Environmental variables are defined as those related to a non-work setting (i.e. opportunity and kinship responsibility).

[7] Individual variables are defined as those related to constraints on intent to stay resulting from previously formed personality traits or characteristics unique to an individual employee (i.e. (job involvement, general training, positive and negativity affectivity).

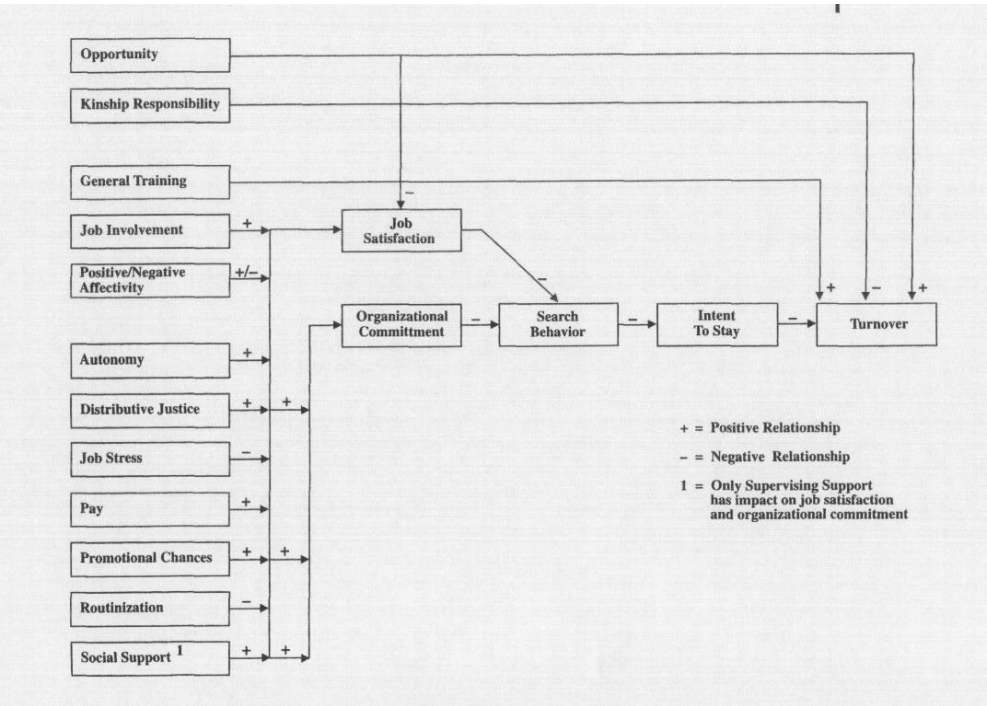
[8] Structural variables are defined as those related to the work environment (i.e. autonomy, pay, distributive justice, stress, promotional chances, routinization and social support).

[9] Intervening endogenous variables are defined as those that intervene between the exogenous variables and turnover or its proxy (i.e. job satisfaction, organizational commitment, search behavior, and intent to stay).

[10] Endogenous variables are the equivalent to the dependent variable generated within a model.

[11] Demographic variables are defined as social categories devoid of any specific content (i.e. age, gender, ethnicity, marital status, etc).

Figure 5: The Price and Mueller Causal Model of Turnover (2001)



Source: International Journal of Manpower; 2001; 22(7); Reprinted with permission from Emerald Group Publishing, 4 May 2010.

Dependent Variable-2001 Causal Model of Turnover

In his final model, intent to stay, rather than intent to leave; is the dependant variable. Price admitted that he is not sure why intent to stay became the dependant variable in the Wilford Hall study other than saying that intent to stay was moderately associated with turnover (2001).

Intent to stay is defined as the employee's expected likelihood of remaining in an organization (Uden-Holman, 1992). Intent to leave is defined as the extent to which an employee intends to discontinue employment in an organization (Moorhead, 1993). According to research by Halaby (1986) intent to stay is affectively neutral and focuses on an employee's intent to stay or leave the organization. Both are proxy measures for

turnover, and both have support in the literature for use as the dependent variable in turnover research. Support for intent to stay is based on the work of Price and Mueller (1981, 1986), their graduate students (Martin, 1979; Iverson, 1990; Kim, 1996), and other researchers in the field (Steel and Ovalle, 1984; Carsten and Spector, 1987; and Kim, 1996). This study utilizes intent to leave as the dependent variable. Consequently, further supportive evidence for utilizing intent to leave as the dependent variable is detailed in the following paragraphs.

Intent to leave is indicative of the employee's degree of intention to leave the organization, but it does not necessarily equate to leaving or quitting. Studies have demonstrated that measuring intent to leave is a strong predictor for turnover; however, although Mobley et al. (1979) suggest that intentions to stay or leave are consistently related to turnover behavior, they account for less than 24% of the variance for turnover. Several other studies have also documented the correlation between intent to leave and turnover. In one of the first comprehensive meta-analyses on turnover, Hom and Griffeth (1995) found intent to quit was strongly correlated to turnover ($p < .05$). Rocco et al.'s study (1977) on the re-enlistment of naval enlisted personnel found the relationship between stated intent and actual behavior to be significant. The authors tracked the re-enlistment actions of the sample and found that among those expressing negative intentions, 94% actually did not re-enlist. Similarly72% of those of expressing positive intentions did re-enlist. In a 1982 review and meta-analysis of research between behavioral intent and employee turnover, Steel and Orville cited 34 studies where intent was found to be a significant predictor of turnover. Vandenberg and Nelson (1999) cautioned that although the research suggests that an association exists between intent to leave and turnover, the strength of the relationship varies widely across studies. They concluded that "high turnover intention should not be considered a precursor to the inevitable exit of a valued employee." Rittenhouse et al. (2004) assessed the relationship between physicians' reported intentions to leave their clinical practice and their actual

departure and found a positive predictive value of actual departure from practice at 35.4% with a sensitivity of 73.3%.

Many of the studies noted the moderating effect of the military. Unlike most employees in civilian organizations, enlisted and officer personnel in the Armed Forces are under a contractual obligation. As a result, it is impossible for an officer to spontaneously "quit." Usually, the paperwork is initiated one year from the time an officer intends to leave the service. This usually coincides with the fulfillment of their contractual obligation, but not always. It has been shown that the predictive value of intent to leave decreases as the time lag increases between intent to leave and leaving (Hayes et al, 2006). Thus, the impact of intent to leave and turnover in military studies may not be generalizable to civilian populations.

Predictor (Independent) Variables - 2001 Price & Mueller Causal Model

The following section provides definitions and background for the predictor and dependent variables included in Price's 2001 Causal Model of Turnover. Derivations and significance of the variables that were mentioned in the previous section (Evolution of the Price and Mueller models of turnover) are not repeated. Although this study on the retention of junior army dental officers does not include all of the variables included in the 2001 Causal Model, it is important to include Price's variables in the literature review because they have been found to be important determinants of turnover.

Domains

The Price Causal Model of Turnover contains four major domains: environmental, individual, structural, and intervening (Price, 2001). The first three domains represent exogenous variables while the intervening domain represents endogenous variables. Environmental variables represent "constraints on intent to stay resulting from social conditions external to an organization" (Kim, 1996). Individual

variables are related to constraints on intent to stay resulting from previously formed personality traits or characteristics unique to an individual employee (Kim, 1996). Structural variables represent "constraints on intent to stay stemming from imminent conditions in the workplace" (Kim, 1996). Intervening variables are defined as those that intervene between the exogenous variables and the dependent variable, turnover (Kim, 1996). "The distinction between endogenous and exogenous variables in the model is intended to differentiate from direct impacts of exogenous variables on intent to stay and also designed to highlight the processual nature of the causal model" (Kim, 1996).

Environmental Domain

Opportunity

Opportunity is one of the 22 determinants for turnover presented in the 2001 Causal Model. It is defined as "the availability of alternative jobs in the environment" (Price, 2001 p. 601). Barring a workforce shortage in certain occupations (e.g. nursing, IT professionals, dentistry, etc), opportunity may be a reflection of the economy. When the economy is weak, there is less opportunity for employees to seek jobs elsewhere. As a result, employees may remain in their current positions even if dissatisfied. When the economy is strong, opportunities increase, and employees may seek alternative jobs even though their overall job satisfaction is good. In their meta-analysis of turnover literature, Tuttle and Cotton found opportunity to be positively associated with turnover. As more opportunities existed, a higher rate of turnover was experienced (Cotton & Tuttle, 1986).

In a 1995 meta-analysis, Hom and Griffeth found opportunity only modestly predicted turnover. Their 2000 meta-analysis of more contemporary literature found similar findings with perceived alternatives modestly predictive of turnover. They note that the weak predictive validity of opportunity may reflect ongoing shortcomings in how perceived alternatives are operationalized (Griffeth et al., 2000).

Increased opportunity may decrease the perceived risk of leaving a job while decreased opportunity increases the perceived risks of leaving a job or its correlate. Allen (2004), in explaining the link between turnover intentions and behavior states: "Turnover decisions inherently involve elements of risk and uncertainty. Much in human behavior can be explained by risk avoidance or at least a minimalization of perceived risks." Opportunity can be a significant factor in moderating an employee's intent to leave or stay.

Kinship Responsibility

Price (2001) defined kinship responsibility as "obligations to relatives living in the area." Kinship responsibility, kinship support and social support are sometimes utilized interchangeably in turnover literature. This did not seem to be Price's intent as he defined social support as "assistance with job related problems" (2001, p. 607). He then distinguished three types of social support to include: peer, supervisory and kinship support (Price, 2001). These distinctions were included as a result of a study done by his graduate student, Iverson (1992), who found the definition, measurement, and significance of kinship responsibility too narrow to explain other forms of support.

Two other studies studied the role of work-family conflict and employee turnover (Boyar et al, 2003, Ahuja et al, 2007). They found family responsibility, especially as it relates to family-work conflict and work-family conflict, to be associated with intent to leave.[12] However, in many models the role of the family as it relates to kinship support and responsibility are excluded altogether.

Cotton and Tuttle (1986) found satisfaction with supervisors to be strongly predictive of turnover ($p<.0005$) and satisfaction with co-workers to be moderately predictive (i.e. less satisfied employees were more likely to leave the organization). In

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[12] The difference between work- family and family-work lies in the origin of the conflict.

contrast, Hom and Griffeth in their 1995 and 2000 meta-analyses found weak support for the predictive ability of satisfaction with co-workers, supervisory satisfaction and leader-member exchange to turnover. However, they found work group cohesion to be moderately predictive of turnover. In addition, they reported kinship responsibilities to be weakly predictive of turnover (Hom & Griffeth, 1995; Griffeth et al. 2000).

The influence of kinship support on turnover has been studied extensively by the military (Etheridge, 1989; Congressional Budget Office (CBO), Publication Number 2777, 2006; Military Service and Marriage: A Review of the Research, National Healthy Marriage Resource Center (NHMRC) Bibliography, 2005.and Hosek, 2006). The military relies heavily on spousal support and family support, especially for Soldiers serving on unaccompanied tours [13]and overseas deployments. Research on the relationship between spousal support and retention demonstrates that when a spouse was supportive of a member's remaining in the military the member was less likely to leave the service (Etheridge, 1989). A study conducted by Bowen (1986) among Air Force enlisted personnel also found spousal support affected retention.

In addition to family support, family separation is also associated with turnover. A 1987 Rand study showed that family separation was cited as one of the top five reasons why military members left the service (Vernez, G. & Zellman, 1987). Wisercaver et al. (2004) reported they consistently found that "the time separated from families" was one of the top reasons cited by Soldiers as a reason they considered leaving the Army. Etheridge (1989) found "a consistent relationship between spousal support for the military career and both career intent and retention." Rakoff, Griffeth and Zarkin (1994) analyzed 11,036 Army Family Research Program surveys collected from Army Soldiers

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[13] Unaccompanied tours are tours of duty where spouses and family are not authorized to accompany the service member. In some cases, service members may elect to bring their family, but the military will not pay for their expenses (travel or living expenses). In most cases these tours are less than one year in duration.

and concluded: "our results suggest that family factors have a substantial impact on the retention decisions of soldiers." In a report on the impact of operations tempo (optempo) on turnover intention in the army, Huffman and al. (2005) found that among junior officers family concerns were related significantly to their intention of leaving the service.

There also seems to be link between spouse employment and retention. Surveys of junior dental corps officers have found that spousal support associated with spousal employment is an important dissatisfier for staying in the military (Mazuji et al. 2005; Chaffin et al. 2008). Junior military officers who enter the military service with significant debt often rely on spousal income. Many of these officers are married to professionals who find it difficult to maintain their careers during the multiple moves required by an Army career. In addition, it has been anecdotally reported on exit surveys that spouses are dissatisfied with the pay disparity between the military and civilian sector, which might result in greater turnover among junior dental officers despite the fact the majority are reporting positive job satisfaction (MAJ Paul Colthirst, personal communication, January 18, 2009).

Individual Domain

Job Involvement

Job involvement is "the willingness to exert effort on the job" (Price, 2001). Price and Mueller believed the higher the employee's job involvement, the lower the turnover. Because dental officers have two professions, the profession of dentistry and the profession of being an officer, job involvement in one may not correlate to job involvement with the other. Some senior leaders in the Dental Corps have expressed concern that junior officers are not as "involved" in the military as was their generation

personal communication, anonymous[14]). The reduced involvement may be a reflection of the millennial generation's value of work-life balance (Zemke, R., Raines, C. & Filipczak, B. 2000; Smola & Sutton, 2002). Other studies have not found job involvement to be a strong predictor of turnover. (Price, Huselid & Day, 1991 Griffeth & Hom, 2001).

General Training

General training is "the extent to which the knowledge and skills required by a job are transferable between employers" (Price, 2001). Price and Mueller believed that increased general training produces a greater amount of turnover. Moorhead, a graduate student of Price and Mueller, implies that military programs which pay for the education of nurses, physicians, pilots, etc may result in increased turnover (1993). Dental Corps initiatives, such as the Health Professions Scholarship Program (HPSP), that pay for dental school and specialty training would fall into this category. Attrition rates of junior officers who are specialists (e.g. endodontist, orthodontist, oral surgeon, etc) suggest that the specialty training and experience provided by the Army makes dentists more marketable than they would have been otherwise. Until recently the majority of junior officer specialists left the military after their obligation for training had been paid back (personal communication, COL.Steve Tanner, Army Personnel Proponency Division, Feb, 2009).

Positive/Negative Affectivity

Positive and negative affectivity were added by Price and Mueller to later models due to research by Watson & Clark (1984) and Brief et al (1988). According to Price (2001) positive and negative affectivity "are dispositional tendencies to experience

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[14] Issues cited as personal communication are common knowledge among commanders in the Dental Corps, but for reasons of political sensitivity and the nature of the issue specific people prefer not to be identified.

pleasant and unpleasant emotional states." Positive/negative affectivity is the way an individual views themselves, others, and the world. To put it simply, an individual with positive affectivity views life from "the cup half full" perspective whereas an individual with negative affectivity views life from a perspective of "the cup half empty" view. Price and Mueller found positive affectivity contributed substantial effects (0.12) in their Wilford Hall study (Price, 2001).

Although they did not assess positive/negative affectivity specifically in their meta-analyses, Hom and Griffeth (1995) and Griffeth et al. (2005) found "met expectations" to be a weak predictor of turnover. In assessing positive and negative affectivity as a predictor among nurses, Chen et al. (1996) found that although positive and negative affectivity were strong predictors for job satisfaction, they were not predictive of turnover intentions. Intuitively, it makes sense that an individual's attitude impacts job satisfaction. Positive and negativity may not be included in other models of turnover because research by Brief et al (1988), and later by Price (2001), indicated that these variables may "contaminate or bias the measurement of other variables such as satisfaction by means of selective perception."

Structural Domain

Pay

Price (2001) defines pay "as money and its equivalents (fringe benefits) which employees receive for their services to the employer." Pay was one four determinants in Price's original model with the proposition that "successfully higher amounts of pay will probably produce successively lower amounts of turnover" (Price, 1977). Price emphasized that pay is not the same thing as satisfaction with pay concluding, "Pay is an objective variable, and satisfaction with pay a subjective variable" (Price, 1977). Cotton and Tuttle (1986) found pay dissatisfaction to be a strong predictor of turnover ($p<.0005$). In contrast, Hom and Griffeth and Griffeth et al. in their 1995 and 2000 meta-analyses

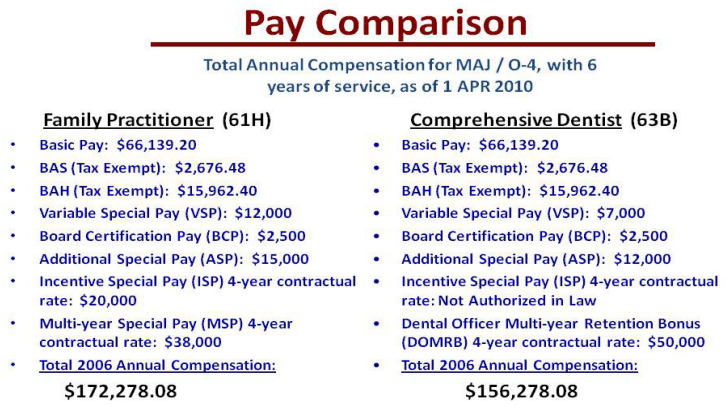
found little direct support that dissatisfaction with pay was strongly predictive of turnover. In a survey of over 11,000 Soldiers, Rakoff et al. (1994) came to a similar conclusion.

In the past two surveys of junior dental officers, pay was cited as the number one reason for their intent to leave the service (Mazuji et al, 2005; Chaffin et al. 2008). With the Bureau of Labor Statistics (2008) reporting the average income of a general dentist to be $154,000, it is no surprise that junior officers leave the military for what they perceive to be "greener pastures." Junior dental officers perceive that their civilian counterparts in their clinics are being paid substantially more for the same work, although a careful analysis of pay and benefits of Army officers does not substantiate this perception. When annual leave, federal holidays, continuing education, health benefits and nontaxable income such as Basic Housing Allowance (BAH) and Basic Subsistence Allowance (BAS) are utilized to compare civilian dental officers, contract dentists, and army junior dental officers' pay; the junior officer compensation package appears to be competitive with those of their civilian counterparts (COL Art Scott, Presentation at DENCOM Commanders Conference, 29 April 2010 (Figure 6). Even if officers are "satisfied" with their pay, many cite that their pay does not cover the student debt loan repayments they owe for accumulated debt from undergraduate and graduate school (Chaffin et al.,2008).

Autonomy

There are many ways to define autonomy. For example, Price (2001) defines autonomy as "the degree to which an employee exercises power relative to his/her job." Hom and Griffeth (1995) define autonomy as "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling work and in determining the procedures to be used in carrying it out."

Figure 6: Military Pay Comparison for Major with 6 Years of Service



Source: PowerPoint Presentation given at DENCOM Commander's Conference, April 29th, 2010, COL Art Scott, Office of the Surgeon General

Autonomy decreases or increases turnover by its positive or negative impact on job satisfaction which is an antecedent to turnover (Price, 2001). Price suggested the influence of autonomy on job satisfaction and turnover is probably underestimated, although Griffeth et al. (2000) found autonomy to be only moderately predictive of turnover.

Few studies have focused on the relationship between autonomy and the intention to leave among professional health care providers. A recent meta-analysis that examined nurse job satisfaction found autonomy to be strongly correlated with job satisfaction (Zangaro et al., 2007). Indeed, many of the studies that have been conducted within the nursing profession have found autonomy to be a positive predictor of job satisfaction rather than a negative predictor of job dissatisfaction (Laschinger, 2004) This is in contrast to a study by Gremboski (2003) that found reduced physician autonomy translated to lower job satisfaction. On the other hand, Byers et al. (1999) found that autonomy was a significant predictor of job satisfaction among physicians in Army primary care clinics. The authors concluded that changes in health care systems that

reduce, or appear to reduce, the primary care provider's autonomy in clinical matters is likely to reduce provider satisfaction as well.

Work autonomy has been identified as a reason why many dental students choose dentistry as a profession (ADEA, 2006). Dentistry has remained one of the few professions where practitioners enjoy a significant amount of autonomy. In a comparison of dentists working in the private and public sectors, Luzzi et al. (2005) reported lower mean scores of autonomy for dentists practicing in the public sector compared to dentists in private practice. There is a paucity of research that evaluates the impact of autonomy on satisfaction and turnover among dental officers who are subject to organizational policies and constraints in their everyday practice of military dentistry.

Distributive Justice

Distributive justice 'is the degree to which rewards and punishments are related to performance measures" (Price, 2001). Price said "like pay, distributive justice is part of the sanction system in an organization. The difference is that pay is concerned with the amount of the sanctions; whereas distributive justice is concerned with the distribution of sanctions" (Price, 1986,). Hendrix (1998) found distributive justice negatively related to turnover intentions. One criticism of the measurement of distributive justice is that it does not take into account the effects of procedural justice, which focuses on "how" the distributions of outcomes such as pay, promotions, etc. are made (Folger & Cropanzano, 1998). Price (2001) acknowledged the measurement problems of distributive justice with his model. He then offered measures of distributive and procedural justice, but he added that the measures had not been tested for validity and reliability (Price, 2001).

Sheldon et al. (1982) found distributive justice accounted for more variance in turnover intention that procedural justice. Dailey & Kirk (1992) found that forms of justice in the work setting appear to be stronger predictors of intent to quit than core work attitudes. They concluded: "the results made it clear that ineffective performance

appraisal and planning systems contribute to employee's perceptions of unfairness." In a study among information technology (IT) professionals (a profession which has workforce shortages and opportunities similar to dentistry), Pare and Tremblay (2000) found that distributive justice practices have a negative and significant effect on turnover intentions among IT specialists.

Hom and Griffeth (1995) summarized the procedural rules of justice for compensation. The military's compensation system ranks favorably when graded by the system used by Hom and Griffith (1995). However, there has been some criticism that such a system does not adequately differentiate reward or remunerate high performers differently from low performers (Allen & Griffith, 1999). The military performance appraisal and compensation system are complex, but generally the processes have been deemed fair and equitable. This does not suggest, however, that such processes are necessarily perceived favorably by junior officers. In summary, Hom and Griffeth (1995) and Griffeth et al. (2000) found distributive justice to be moderately predictive of turnover.

Job Stress

Job stress is "the extent to which job duties are difficult to fulfill" (Price, 2001). High workload, role ambiguity, resource inadequacy, role conflict are all components of job stress. There have been several studies on dentists in the civilian and military sectors evaluating job stress and burnout (Te Brake et al, 2008; Denton et al, 2008, Shelley et al, 1991). In general, dentists are not overly stressed.

General surveys of junior dental officers, as well as junior officer exit surveys, indicate that they perceive potential deployments to a combat zone or time served in a combat zone as a significant determinant of their intent to leave the service (Chaffin et al.2008). In a recent survey of dental students, one of the significant deterrents to consider joining the Army Dental Corps was the possibility of being deployed to a

combat zone (AMEDD Awareness, Attitudes and Perceptions presentation, Jun24, 2008). The stress of deployment is multi-faceted and may be more accurately reflected in determinants of kinship support, social support and job satisfaction. Price (2001) believed increased job stress increased turnover. In their 1995 and 2000 meta-analyses, Hom and Griffeth and Griffeth et al. found small to moderate effects sizes for job stress and turnover.

Promotional chances (opportunity)

Promotional chance is "the degree of potential mobility within an organization" (Price, 2001). Studies reveal that promotional opportunity, or opportunity for advancement in an organization, is modestly predictive of turnover. For example, Cotton and Tuttle (1986) found satisfaction with promotional opportunities to be moderately predictive of turnover ($p<.005$). In contrast, Hom and Griffeth (1995) and Griffeth et al. (2000) reported small to moderate effect sizes for promotional chances and turnover.

Free text comments from past Dental Corps surveys and anecdotal reports among junior officers in the Dental Corps reveal that many feel they should be promoted sooner than they are (Mazuji et al., 2005; Chaffin et al., 2008). Promotion times are regulated by law. For over twenty years, the career cycle for the majority of Army Dental Officers requires them to spend five years in a rank before they are eligible to be considered by a board for the next rank. If selected for promotion, the officer will be promoted during the sixth year of rank to the next higher rank. There are exceptions where some officers can be promoted earlier than their peer group (cohort by year group) if recommended by the board (i.e. below the zone promotions). Many captains have voiced frustration that they were not selected below the zone for early promotion to major (personal communication, Major Paul Colthirst, 13 December 2009). Whether this translates into a perception of reduced promotional opportunity is not clear at this time; thus, it should be considered for further research.

Routinization

Routinization is "the degree to which the job is repetitive" (Price, 2001). Cotton & Tuttle (1986) found routinization to be a weak ($p>.05$) predictor of turnover. Meta-analyses by Mobley et al. (1979), Hom and Griffeth (1995), and Griffeth et al. (2000) found routinization to be positively associated with increased turnover. Many of the studies on turnover have been conducted on nurses and blue-collar workers whose occupations are more prone to repetitive tasks. Routinization in dentistry has not been well-defined or well researched. Certain ergonomic motions in dentistry (specifically in dental hygiene) are known to be repetitive and to sometimes result in debilitative conditions (e.g. carpel tunnel syndrome) (Anton, Rosecrance, Merlino & Cook, 2002). This may lead to a reduction in hours or early retirement of providers (American Dental Association Survey Center. 1997 Survey of current issues in dentistry: Repetitive motion injuries).

Within the Army Dental Corps, junior officers historically put in their time on the so-called "lead lines" where they treated multiple patients with multiple cavities day in and day out. The term "lead line" implied a certain level of routinization and drudgery where dentists were not allowed to practice the full scope of dentistry. Though the Dental Corps claims the day of the "lead lines" are passé, junior officers equate Expanded Function Dental Assistant (EFDA) teams and the Dental Care Optimization (DCO) as being a contemporary equivalent. Some junior officers feel they are on an assembly line repetitiously treating Class III dental patients [15] day in and day out (personal communication, COL Steve Eikenberg, May 7, 2009).

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[15] Class III dental patients are defined as patients who require urgent or emergent dental treatment. Class 3 patients are normally not considered to be deployable worldwide due to their dental status. (AR 40-3).

Social Support

Social support is "assistance with job related problems and consists of 3 types of support in the workplace: supervisory, peer and kinship" (Price, 2001). House (1981) believed social support reduced turnover by buffering job stress. However, Hom and Griffith (1995) found lack of supervisory support can result in increased turnover. Price (2001) suggests, 'Research supports a negative relationship between peer support and turnover; a positive or negative relationship between supervisory support and turnover (depending on the type of supervisory support); and positive or negative relationship between kinship support and turnover.' Cotton and Tuttle (1986) found peer supervisory support to be a strong correlate to turnover and peer support to be a moderate predictor of turnover. Hom and Griffith's (1995) and Griffeth et al. (2000) meta-analysis reported small to moderate effect sizes for co-worker (peer) and supervisory support. In summary, high supervisory, peer, and kinship support can reduce turnover whereas low supervisory, peer, and kinship support can increase turnover (Price, 2001). The three aspects of social support have been reported to be weak to moderate predictors of turnover (Hom and Griffeth, 1995; Price, 1986; Cotton and Tuttle 1986; Griffeth et al, 2000).

Intervening Domain

Satisfaction

Satisfaction is "the extent to which employees like their work" (Price, 2001). Cotton and Tuttle (1986) found overall job satisfaction to be a stable and reliable correlate to turnover ($p<.0005$). Griffeth et al. (2000) found that overall satisfaction was the best predictor of a satisfaction measure and a strong predictor for turnover with these results confirming the predictive validity for overall satisfaction from Hom and Griffeth's 1995 meta-analysis.

The nursing profession has provided a virtual laboratory for research on turnover. Despite attractive wages, nurses have one of the highest turnover rates in health care

(GAO-01-912T, 2001). Like dentistry, the nursing profession is facing a critical nursing shortage. Price and Mueller and their graduate students conducted many large scale studies analyzing job satisfaction as predictors of turnover among nurses especially in hospitals where sample size was less of an issue. They found overall satisfaction was a strong predictor for turnover (Farrell, 1977; Martin, 1977; Price, 1977).

Unlike the nursing profession, turnover has not been a major factor for the dental profession. It is by and large a cottage industry where solo practitioners make up the majority of the workforce (Burt & Eklund, 2005). Chapko et al. (1986) found a lack of relationship between job satisfaction and dentist's intent to change jobs. Shugars et al. (1991) developed an instrument to measure job satisfaction among dentists and found the majority of dentists were satisfied with most facets of their job. However, they did not assess the relationship between job satisfaction and turnover. In a comparison of job satisfaction between dentists working in the private versus public sector in England, Harris et al. (2007) found dentists in private practice settings reported higher levels of job satisfaction than those practicing in public (nationalized health care) settings. Shelley et al. (1991) measured job satisfaction and burnout using the Maslach Burnout Index (MBI) among military dentists and found that overall, military dentists scored moderate to high on job satisfaction and low on burnout.

While past surveys and exit interviews of dentists in the Army indicate a high rate of professional satisfaction, the studies did not perform statistical analyses to determine whether satisfaction is associated with turnover.

Commitment

Commitment is the relative strength of an employee's identification with and involvement in the employing organization (Kim, 1996). Mobley, Griffeth, and Megliano (1979) and Cotton and Tuttle (1986) found organizational commitment to be a consistently negative predictor of turnover (inverse relationship). Hom and Griffeth

(1995) and Griffeth et al. (2000) confirmed the significance of organizational commitment in turnover. However, the authors concluded that more research was needed to determine the relationship between commitment, job attachment and turnover. Specifically, some researchers have voiced concerns about the ad hoc measurements of commitment and lack of longitudinal studies. Meyer and Allen (1991) were the first to publish extensively on and distinguish between the three components of organizational commitment: affective commitment (AC),[16] continuance commitment (CC)[17] and normative commitment (NC).[18] Researchers in the field of turnover had argued that ad hoc measures of measuring commitment in various models did not adequately define or measure the relationship between commitment and other variables in turnover.

In a 12 year study of U. S. Army Officers from 1988 to 2000, Payne et al (2002) found that officers' career intentions had not changed dramatically during that time. In addition, they noted, "despite the poor reputation of Generation X workers have regarding loyalty to their employers, almost 50% of Generation X officers surveyed in 2000 reported intentions to remain in the military." The major finding of their report was that AC and CC correlated strongly with all three retention variables (career intentions, obligation completion, and years of service). An entire issue of Military Psychology (15 (3)2003) was dedicated to the subject of organizational commitment. The introductory overview criticized past research stating, "most military researchers who have attempted to measure organizational commitment have done so on an ad hoc basis, preferring to

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16 "Affective commitment refers to the employee's emotional attachment to, identification with, and involvement in the organization" (Meyer & Allen, 1997, p. 11).

17 "Continuance commitment refers to an awareness of the costs associated with leaving an organization" (Meyer & Allen, 1997, p. 11).

18 "Normative commitment refers to commitment based on a sense of obligation to the organization" (Meyer & Allen, 1997, p. 11).

invent new terms and scales rather than incorporate well-established measures ” (Gade, 2003).

Search Behavior

Search behavior is “the degree to which employees are looking for other jobs” (Price, 2001). It has been described by many in the literature as a part of the withdrawal process, which in part determines an employee’s intent to stay or leave (March & Simon, 1958; Mobley, 1977; Price & Mueller, 1981). It has been suggested that increases in search behavior increase turnover (Price, 2001). Among junior officers in the Dental Corps, “moonlighting” or working part-time in the civilian sector is often an indicator of intent to leave. However, this is often governed by the commander’s approval, licensing restrictions, and duty location. Some studies have found search behavior to be an equivocal predictor of turnover (Blau, 2006; Kirshenbaum, 1994; Kopelman, 1992). In contrast, Griffeth et al. (2000) found search behavior to be strongly predictive of turnover.

Strengths and Weakness of the Price and Mueller 2001 Causal Model

In evaluating his life’s research in the field of turnover, Price has probably been his own worst critic. In the published anthology on turnover, *Innovative Theory, and Empirical Research on Employee Turnover* (Hom & Griffeth, 2004), Price addresses criticism of his research. Such criticisms include: ignoring the process and influence of intervening and moderating variables; lack of generalizability (because of narrowness and homogeneity of study populations); scope of the studies (i.e. failing to detect differences in behaviors of part-time versus full-time employees); lack of systematic analysis; lack of empirical validity for the inclusion or exclusion of determinants; and failure to conduct longitudinal research on the collected data**.** The major strength behind Price and Mueller’s research in turnover has been the voluminous research and testing of their

models by their graduate students. Their graduate students published over 33 master and doctoral dissertations relating to turnover research. The accessibility, availability, and proximity to such a vast body of published and unpublished research provides ample incentive for employing the Price and Mueller model as a theoretical template for this study. Another strength behind the research conducted at the University of Iowa and the latest Price model is that neither he nor his graduate students seemed "married" to a particular model or tied to a particular outcome, thus reducing outcome bias.

In their 1995 review of the Price and Mueller research, Hom and Griffeth concluded: "Price's theorizing and research represents landmark contributions to research into turnover. Unlike more speculative theorists, he identified in 1977 a comprehensive set of determinants of turnover that was based on a systematic and broad review of the literature of research in labor economics, sociology and psychology. Thus, his causal determinants are empirically well grounded and include explanatory constructs historically overlooked by organizational researchers."

In a critique of Price's contributions in the field of turnover research Griffeth et al. (2004) described Price as a "pioneering thinker" in the turnover field and one who initiated the most systematic turnover research. Griffeth et al. suggest that "his 30 year intellectual journey offers valuable insight into theoretical and methodological challenges that continue to confront all turnover researchers."

Although Price and Mueller and their graduate students have contributed substantially to turnover research, others have also contributed greatly to the field. The next section describes additional civilian models introduced by "pioneers" in the field of turnover research.

Additional Civilian Models of Turnover

Published research pertaining to civilian turnover is enormous. It is impossible to cite or credit all of the contributing researchers and authors in the development of civilian

turnover models. Price borrowed heavily from fellow researchers in developing his final model. Three of those models are summarized below.

1). Mobley's Intermediate Linkages Model of Turnover (1977) used a psychological approach in the study of turnover. It explained linkages between job satisfaction or dissatisfaction and employee turnover. In 1979, Mobley revised the earlier model to reflect many direct and indirect influences. The revised model offers a multivariate explanation of turnover as well as identifying a comprehensive set of determinants. (Mobley, Griffeth, Hand & Megliano, 1979) As mentioned previously Price and Mueller adopted constructs (withdrawal intentions and perceived alternatives) pioneered by Mobley. Though modified or refined by various researchers, "Mobley's 1977 model dominates all work on psychological approaches to turnover" (Hom & Griffeth, 1995).

2).Steers and Mowday's Model of Turnover (1981) introduced several important concepts into the theory of turnover. Their model introduced the influence of non-work factors, job performance and an individual's value system in the turnover process. In addition, their model forced scholars to acknowledge that 'factors outside organizational boundaries may influence turnover decisions' (Hom & Griffeth, 1995). Again, there were few complete follow-up studies to affirm the validity of the model, and the one published test of the model by Lee and Mowday (1987) according to Hom and Griffith (1995) yielded "mixed or incomplete support for its validity".

3). Maertz (2004) introduced five antecedents to turnover (i.e. personality, organizational and national culture, organizational performance, occupational attachment and location attachment) and linked them to turnover decisions. The study offered five different models of the five antecedents and their impact on turnover, but it does not attempt to combine them into one model. Additionally the study does not define how the antecedents could be measured.

Limitations of Civilian Models

The common frustration and criticism of past and current models in the field of research is summarized by Holtom et al., (2008) "though there is more theoretical constructs to help explain turnover, there is less theoretical consensus and still a relatively small amount of overall variance in turnover explained. The result, we believe is that the field is richer, but perhaps farther from a unified view of the turnover process than ever before." While academia has focused on the antecedents, pathways, directionality and causality of turnover, they have failed for the most part to "field" test these models among large homogeneous or heterogeneous populations such as one would find in the military. It is analogous to the automobile industry producing a new and improved model Y or Z before the kinks have been worked out on model X. It is understandable that the military is hesitant to embrace each and every model proposed by academia. Furthermore, the measurement of determinants and pathways of these complex models make their application to large military populations impractical. Survey questionnaires designed to measure the significance or predictive values of the model's variables could easily exceed 150 questions, which according to an Army Research Institute report (Benedict, 1988) should be the maximum number of questions fielded in a survey. In comparison, the Army's sanctioned Annual Survey of Military Personnel is the most comprehensive, and probably the longest of any survey approved for use by the Army. It is administered annually, and the 2008 survey consisted of 65 questions and was 15 pages long.

In summary, civilian models on turnover have continuously evolved. Theoretically, civilian models should be applicable, reliable, and valid for any population. Models, such as the Price and Mueller model, are an excellent template for illustrating significant determinants, their mediators, and directionality of causal pathways.

Civilian Models Applied to Military Research on Turnover

The previous section highlighted the evolution and expansion of turnover research from simple explanatory models to complex conceptual models. Although there are inherent problems with applying civilian models to military situations, this has not and should not prevent researchers from using civilian models to explain, measure, or predict turnover in the military. Civilian models have provided the framework of theory and methodology in turnover modeling and as a result have been utilized to assess predictors of turnover in the military

In a comprehensive literature review on turnover in the military, Holman (1989) reviewed 37 empirical studies and two reviews of the literature and concluded, "The most striking pattern in the literature (both published and unpublished) is an inefficient approach to model construction, where a model is presented at all. Authors rarely give a theoretical basis for their variables. Most researchers do not make use of path models and thus exclude intervening variables and indirect effects." Holman also notes that some studies utilized ad hoc models, used inappropriate or underpowered statistical analyses, failed to report reliability, and /or statistical significance, and excluded relevant data. Despite his criticism, Holman says the majority of studies conducted on the military are of high quality, and their credibility lie in their large reported sample sizes.

In the Army Research Institute (ARI) report (1994), *Models of Soldier Retention*, Rakoff et al., noted that previous research on retention rarely provided a broad multivariate approach to the issues. Though the authors claim to "build multivariate models of factors affecting Soldier retention," the end product appears to present bivariate analyses only. Intervening or moderating variables are not presented, and causal pathways are not explained.

In another ARI report (2006), *Deployment and Consequences: A Review of the Literature and Integration of Findings into a Model of Retention,* Wisecarver et al. summarized previous studies as offering either simple descriptive analysis or bivariate

relationships. “While a bivariate correlation accurately describes the existing relationship between two variables, it is not sufficient to predict one of the variables to the other.” The authors claim that only by developing a model that examines the combined effect of these factors on retention can one begin to understand how the factors interact as a system and affect retention. While the authors acknowledged the many factors impacting retention in the military, they focused their review of the literature and illustrative models on one factor, commitment, (i.e. affective, continuance, normative and its antecedents). They justified this by saying that many of the factors important in retention are beyond the control of the organization.

While the current study addresses the retention of full-time active duty officers, we would be remiss for not acknowledging the plethora of research conducted on reserve and National Guard military personnel. Though Price and Mueller (1986) cautioned that determinants of turnover and their relationship to turnover between full-time and part-time employees differ, there are commonalities. To exclude research conducted among the Reserve and National Guard fails to recognize their contribution to the field of turnover in the military. Griffith (2005) published a review of the literature on retention in the Army Reserve and National Guard for his study on the reenlistment intentions of Soldiers in the Maryland National Guard. He, too, focused on determinants and antecedents to turnover. Griffith reported intent to leave was positively associated with actual turnover. Specifically he found that Soldiers who stated they would leave the service were three to four times more likely to have actually left one year later. He found that the following factors contributed to Soldiers staying in the military: military experiences (preparation for mobilizations or for civilian employment), unit activities, quality training, leadership, family support and employer support and monetary incentives.

Much of the published literature on turnover in the military has focused on single determinants of retention ranging from family factors to deployments (Weiss et al, 2002

Kapp, 2002; Payne et al, 2002; Gahol, 2005; Congressional Budget Office, 2006; Henning, 2006 ; Wisecarver 2006; & GAO-07-224, January 2007). Use of validated civilian models on turnover research in the military is still infrequent. In a study examining turnover among New Zealand Army personnel, Capon et al. (2005) criticized the lack of application of civilian retention theory in military studies. Again, instead of using a validated civilian model, the authors created their own model, which they stated "contained a number of distal and proximal antecedents of retention that were derived from several streams of civilian research."

Many studies on turnover in the United States military, like our own study, use civilian models as templates to explore the predictors, correlates, and pathways specific to turnover in the military. A recent study commissioned by the Navy to evaluate turnover presented a comprehensive review of civilian models and their application for military turnover research. Scherwin et al.(2007) concluded that future research in the field of turnover should include testing civilian models with military personnel survey data and military models with civilian survey data. Consequently, this study followed the Price Causal Model as closely as possible.

Gaps in the Literature

The best source to identify gaps in the literature relative to turnover is recommendations for future research by pioneers in the field. Griffeth et al. (2000) concluded that due to the varying reported effect sizes across various studies and populations, "greater theoretical attention should be paid to moderators." Price (2000) recommended that future research should include: theoretical considerations, such as investigating interaction effects between determinants, and methodological considerations, such as improving the measures for the various antecedents and correlates of turnover. Cotton and Tuttle (1986) concluded that "factors related to organizational size, job characteristics, organizational structure and other organizational factors seem

ripe for study." Hom and Griffeth (1995) recommended further research into the employee selection process (person-organization fit) and its impact on turnover. They also recommended further exploration relative to the impact of financial incentives and turnover. Ironically, they also suggested, "We must also reconsider the possibility that current retention-building practices are no longer effective in the wake of widespread corporate restructuring and downsizing"

Summary

Models of turnover have evolved in the last few decades due to in- depth research based on hundreds of studies. There is a general consensus among researchers that turnover is a dynamic process and that models will change as more is learned about the sociological, psychological, and economic constructs on which they are based. This review of literature has focused on the Price and Mueller model (2001) because its determinants best define and measure intent to leave in a variety of settings and populations. In developing their model, Price and Mueller conducted multiple studies among military personnel and gained a unique and valuable appreciation for the cultural and organizational nuances unique to the military.

In conclusion, meta-analyses conducted on predictors of turnover indicate the following determinants are strong predictors for turnover: job satisfaction, organizational commitment, job search, opportunity and quit intentions. Autonomy, routinization, promotional chances, job stress, distributive justice, positive/negative affectivity, job involvement, pay, social support (leadership) have moderate to small effect sizes for predicting turnover. In addition, the review of the literature found that few civilian studies addressed predictors of turnover that are relevant to the military, such as deployments, operations tempo (optempo[19]), personnel tempo (perstempo[20]), military

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[19] "DoD adopted 'operations tempo' as a measure of the pace of an operation or operations in terms of equipment usage -- aircraft 'flying hours,' ship 'steaming days' or 'tank [driving] miles.'" The term became jargon: optempo" (Garamone,J, 1999).

lifestyle, multiple moves of employees from one location (assignment) to another, etc. Because this study on junior Army dental officers includes many variables that previously have not been researched within the civilian literature, the findings should contribute significantly to turnover research in the Army.

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[20] "Maria Hughes, senior readiness analyst in the Pentagon, said the services generally define personnel tempo – 'perstempo' -- as the time an individual spends away from home station" (Garamone, J. 1999).

CHAPTER 3

METHODS

Overview

The Army Dental Corps has a potential workforce crisis. Over 60% of its junior dental officer accessions depart the military after six years of service (personal communication, COL Steve Tanner, Army Personnel Proponency Divison, February 27, 2009). For the first time in over 10 years, the Army met it recruiting goals in 2009, possibly due to rising dental education cost, declining opportunities for student loans and the economic downturn (Nathan Parrish- personal communication, 30 April 2010). However, the retention of junior officers has yet to improve substantially, despite reduction in deployment times and added financial incentives.

This chapter discusses the methodological procedures that were used to test the hypotheses for this study. The chapter consists of: 1) aim of study; 2) hypotheses; 3) operational definitions of each domain; 4) summary tables of each domain with : a) operational definitions of the predictor variables; b) corresponding questions found on the questionnaire (Appendix A) that were used to measure each domain and c) the rationale for the exclusion of select questions; 5) IRB approval; 6)discussion of the sample population and the data collection procedures; and 7) discussion of the statistical analyses.

The aim of this study was to determine the significant predictor variables associated with the retention of junior officers. For this study, retention was defined by "intent to leave." Twenty-three predictor variables and seven demographic control variables (30 variables total) were originally considered for this study and grouped into the following six domains based on prior research (Price, 2001; Moorhead, 1993; Iverson, 1992; Uden Holman, 1992): 1) structural, 2) military specific work conditions, 3) environmental, 4) individual pre-entry, 5) intervening and 6) control variables. Four predictor variables were excluded from further analyses because they demonstrated:

statistical insignificance in the bivariate analysis, skewness, multicollinearity with other variables, or were assessed to be unreliable as predictors of intent to leave As a result, 19 predictor variables and 7 controls were advanced for further regression analyses

Aim of Study

The aim of this exploratory study was to identify the significant predictor variables associated with junior dental officers' intent to leave the Army Dental Corps.

Hypothesis

H_A= There is a significant difference in junior dental officers intent to leave (ITL) the military based on the following 6 domains and 30 predictor variables.

Hypothesis of Predictor Variables Grouped by Domain

Structural Domain

$H_{A\ (pay)}$ =Dissatisfaction with pay is positively associated with ITL.

$H_{A\ (Bonuses)}$ = Dissatisfaction with bonuses is positively associated with ITL.

$H_{A\ (Benefits)}$ = Dissatisfaction with benefits is positively associated with ITL.

$H_{A\ (Quality)}$ = Dissatisfaction with quality of practice is positively associated with ITL.

$H_{A\ (Professional\ Development)}$ = Dissatisfaction with professional development (training opportunities) is positively associated with ITL.

$H_{A\ (Autonomy)}$ = Dissatisfaction with autonomy is positively associated with ITL.

$H_{A\ (Promotional\ Chances)}$ = Dissatisfaction with promotional chances is positively associated with ITL.

$H_{A\ (Mentorship)}$ =Dissatisfaction with mentorship is positively association with ITL.

$H_{A\ (Command\ support)}$ = Dissatisfaction with command support is positively associated with ITL.

$H_{A\ (utilization\ of\ dental\ skills)}$ = Dissatisfaction with utilization of dental skills is positively associated with ITL.

Military Specific Work Conditions Domain

$H_{A\ (history\ of\ deployment)}$ = Dissatisfaction with history of deployment is positively associated with ITL.

$H_{A\ (deployment\ experience)}$ = Dissatisfaction with training deployment experience is positively associated with ITL**.**

$H_{A\ (possibility\ of\ future\ deployments)}$ = Dissatisfaction with the possibility of future deployments is positively associated with ITL.

$H_{A\ (current\ assignment)}$ = Dissatisfaction with one's current assignment is positively associated with ITL.

$H_{A\ (desirable\ assignment)}$ = Dissatisfaction with future desirable assignments is positively associated with ITL.

$H_{A\ (frequency\ of\ moves)}$ = Dissatisfaction with the frequency of moves is positively associated with ITL.

$H_{A\ (military\ lifestyle)}$ = Dissatisfaction with the military lifestyle is positively associated with ITL.

$H_{A\ (respect)}$ = Dissatisfaction with the level of perceived respect from one's co-workers, peers and superiors is positively associated with ITL.

Environmental Domain

$H_{A\ (kinship\ support/family\ acceptance)}$ = Lack of kinship support is positively associated with ITL.

Pre-entry Domain

$H_{A\ (patriotism)}$ = Patriotism is negatively associated with ITL.

$H_{A\ (student\ debt)}$ = Increasing student debt is positively associated with ITL.

$H_{A\ (military\ obligation)}$ = Increasing military obligation is positively associated with ITL.

Intervening Domain

$H_{A\ (military\ job\ satisfaction)}$ = Lack of job satisfaction within the military is positively associated with ITL.

Demographic (control) Domain

$H_{A\ (rank)}$ = Rank (Captain) is positively associated with ITL.

$H_{A\ (gender)}$ = Gender (female) is positively associated with ITL.

$H_{A\ (race)}$ = Race (white) is positively associated with ITL.

$H_{A\ (military\ occupational\ specialty)}$ = Military occupational specialty (e.g. endodontist, oral surgeon) is positively associated with ITL.

$H_{A\ (age)}$ = Age (younger) is positively associated with ITL.

$H_{A\ (marital\ status)}$ = Marital status (married) is positively associated with ITL.

$H_{A\ (unit\ of\ assignment)}$ = Unit of assignment (e.g. Brigade Combat Team) is positively associated with ITL.

Dependent Variable

Intent to Leave

The best measurement of turnover is the actual count of attrition or of employees that have quit. Price (1977) was careful to remind researchers than turnover included "movement both into and out of an organization." He defined separation rates as the number of employees or members that left the organization during a defined period divided by the average number of members joining the organization during this same time period and cited it as the most frequently used turnover rate in the literature. Separation rates or attrition rates are crude estimates as they include non-voluntary as

well as volunteer separations, which is often a separate and important factor for analysis for the military.

There are various means to define and calculate turnover, which has been a source of frustration to many in academia. Assessing the relationship/correlation of intent (stay or leave) on actual attrition rates requires a longitudinal study design, which is not optimal for graduate students seeking to graduate in a timely manner (Price, 2004). For employers, basing policy on employee quit rates is a passive action (Iverson, 1992). If employers and organizations such as the U.S.Army want to impact turnover, then they must evaluate the intentions of their employees and possibly implement policies or changes prior to an employee leaving the organization. For this reason, intent to leave, rather than actual quit rates, was chosen as the dependant variable for this study.

Intent to leave (ITL) refers to the subjective estimation of an individual regarding the probability of leaving an organization in the near future (Mowday et al., 1982) and was used as the dependent variable for this study. ITL was assessed by the following survey question:

Question 9. (Appendix A) If you are planning on leaving the Army before retirement, will it be (estimate):

(1) Not applicable, I plan to stay in until retirement
(2) After initial tour
(3) After current obligation
(4) After specialty training payback
(5) Beyond current obligation but not retirement
(6) Not sure

In order to obtain greater power and facilitate statistical analysis and interpretation, the answers were recoded to a 3 point likert type scale with 1 being the least likely to leave and 3 being the most likely to leave. The items were recoded as follows:

1=stay= (1) Not applicable, I plan to stay until retirement

2=maybe stay/maybe go= (5) beyond current obligation but not retirement or (6) not sure
3=leave= (2) after initial tour or (3) after current obligation or (4) after specialty training payback

Statistical analyses were conducted using the newly recoded 3 point scale (bivariate and linear regression analyses) as well as a 2 point scale (1=stay vs. 3= leave; bivariate and logistic regression analyses) in order to examine general trends (1-3) as well as examine extreme responses (1 vs. 3) in intent to leave.

Predictor Variables Used in Study Categorized by Domain

The predictor variables were grouped according to the following six domains: demographic (controls), pre-entry, environmental, military work conditions, structural and intervening. These domains were chosen based on research conducted by Price and Mueller and their graduate students at the University of Iowa (Iverson, 1992; Uden-Holman, 1992; Kim, 1996; Price, 2004). The most recent causal model published by Dr. Price lists 22 determinants of turnover (2001). However, previous Price and Mueller research models included over 24 determinants of turnover (not including control variables). In our model, we initially assessed 23 potential predictors of intent to leave plus 7 control variables.

Because this study utilized secondary data, several of the classic Price and Mueller variables (e.g., organizational commitment, positive and negative affectivity, routinization, opportunity, job involvement, job stress and search behavior) were not evaluated since they were not included on the questionnaire. Likewise, because the original survey was designed to address issues and concerns specific to junior Army Dental Officers, new variables that have not previously been studied were added to the model.

Demographic Domain

Demographic variables are "social categories devoid of any specific content and

thus are proxies for general determinants of turnover" (Kim, 1996). They are used in order to "to control for the effects of potentially confounding factors" (Uden-Holman, 1992). This domain consists of 7 variables. Explanation of the recoded demographic variables may be found in the Appendix B.

Table 1: Demographic Domain Variables-Definitions and Associated Survey Questions

Control Variables Domain Operational Definition	Survey Questions	
	Used	Eliminated
Rank–military rank (CPT OR MAJ)	**# 20**	**NA**
Gender-male or female	**#86**	**NA**
Race—white or nonwhite	**#87**	**NA**
Occupational Specialty-63A, 63B ,and all other specialists	**#89**	**NA**
Age- in years	**#88**	**NA**
Marital status- married or not married	**#63**	**NA**
Unit of assignment-current duty assignment type	**#1**	**NA**

Pre-entry (Individual) Domain

Dentists enter military service with certain individual values, attitudes, expectations, and obligations which may influence their intent to leave. Price & Mueller (2001), and others (Brief et al.1988) have proposed such linkages in their model using determinants such as "negative and positive affectivity" and "met expectations," among others. For the purpose of this study, three pre-entry variables were included for assessment: 1) an officer's value of patriotism, 2) his/her student debt and 3) the respondent's military obligation.

Patriotism

Patriotism is defined as the officer's "love for or devotion to one's country" (Merriam-Webster, on-line dictionary, assessed on line at http://mw4.merriam-webster.com/dictionary/patriotism. Accessed April 23, 2010). In past surveys, dental corps officers have ranked patriotism in the top 2 reasons for joining the military (Mazuji et al., 2005; Chaffin et al., 2008). While patriotism may be an incentive to join the military, its role in retention is not clear. For this reason, question 34 was included to assess the influence of patriotism on intent to leave.

Student Debt

Increasing graduate dental student debt has been cited as being a major contributor to a workforce shortage in the public health sector (NASFAA, 2004; HRSA 2008). There have been several published studies detailing the causes of increased dental student debt, long term trends, and the possible implications for attracting graduate students into the profession as well as influencing their choice of career paths post graduation (NASFAA 2007; Chmar JE, Weaver RG, & Valachovic, R.W., 2003.; Chmar J.E., Harlow, A.H., Weaver, R.G., &Valachovic, R.W., 2007; Walton, J.N., Matthew, J.N., Dumaresq, C., & Sudmant, W., 2006 , and Devlin, J & Giannini, P. 2005). The solutions are geared to alleviating debt or providing debt relief through loan repayment, scholarships, increasing availability of low interest student loans and cash sign on bonuses. Such solutions assume dental student indebtedness is the dominant driver behind the choice of career paths because student indebtedness is seen to limit the career path choices of dental students. However, a recent 2006 ADEA survey of senior dental students suggests that debt is not major influence for the career paths of dental students. It appears that even though educational debt may be a burden to dental students, educational loans, grants, scholarships and repayment programs reduce the impact of that burden on post graduation practice plans. Many of the recruiting initiatives for the public

health and military services have focused on financial incentives to alleviate or reduce the educational debt burden of dental students. While these initiatives may appeal to the short term financial need of dental students; they do not address the more long term values or motivational factors of dentists, and thus may fail at retaining them.

Student debt has rarely been assessed as a predictor of turnover in the literature. The importance of student debt cannot be determined by simply analyzing questions about pay. Thus, student debt was included in our research to determine its significance in junior officers' intent to leave.

For the purpose of this study student debt is defined as the total academic/educational/student debt incurred in undergraduate and graduate school upon entry into military service. Anecdotally, junior officers have reported student debt as being a top reason for leaving military service with the underlying assumption being they cannot afford to pay off student loans with their current military salary. There were no questions specifically addressing the influence of student debt on intent to leave. However, two questions addressing undergraduate (68) and graduate student debt (69) were combined and transformed into a new variable called total student debt and assessed in the bivariate analyses for a correlation between student debt and intent to leave. The recoding of questions 68 and 69 are provided in Appendix B.

Military Obligation

One of the unique features of military service is that any dentist who enters the uniformed service incurs an obligation to serve for a specified period of time. The obligation is contractual in nature, and the Soldier is subject to the Uniform Code of Military Justice (UCMJ) for failure to meet the obligation in its entirety. Dental Corps officers cannot just "quit" when they are dissatisfied with their job. Even upon completion of their original or training obligation an officer must apply to leave the service. This process may take up to 12 months for approval. As a result, intent to leave

based on one's military obligation may not be a good proxy for measuring intent to leave. An officer may have every intention of leaving immediately but because he/she has a contractual obligation, there may be a substantial delay between the officer's intent and the ability to leave, leaving ample time and opportunity for him/her to change their mind.

Many of the more successful recruiting tools for attracting dental students and dentists into the Dental Corps has been the Health Professions Scholarship Program (HPSP), the Health Professions Loan Repayment Program (HPLRP) and sign on bonuses. Each of these programs incurs a mandatory service repayment obligation. In addition, some dentists had a ROTC scholarship obligation from their undergraduate education. Questions 65 and 66 to were used to assess military obligation and its association with intent to leave. The recoding of these questions may be found in Appendix B.

Table 2: Pre-entry Domain Variables- Definitions and Associated Survey Questions

Pre-entry Variables Domain/Operational Definition	**Survey Questions**	
	Used	**Eliminated**
Patriotism/Esprit de Corps –an officer's values, enthusiasm, devotion to country, self-less service	**# 34**	**# 35 +**
Student debt-total amount of undergraduate and graduate educational student debt	**#68,69**	**NA**
Military obligation-contractual commitment to serve in the military in return for educational scholarship, loan repayment or monetary compensation.	**#65 , 66**	**#49°, 50°**

+ multicollinearity with other variables

°better addressed by another question(s)

Environmental Domain

The environmental domain consists of those variables which represent constraints on intent to stay or promote intent to leave resulting from social conditions external to an organization. The Price and Mueller Causal Model (2001) includes: kinship responsibility, opportunity, and kinship support (family acceptance) in this domain. Only kinship support was adequately addressed for the purpose of statistical analysis in this survey.

Kinship support (Family acceptance)

Kinship support as defined for this study is the degree of emotional support provided by an individual's immediate family for the officer's intent to remain in the military. The importance of kinship support, or what the military often calls family acceptance, cannot be understated. While the officer may be fully satisfied with a career as a military dentist, his family may not be satisfied with the military lifestyle. As a result, the officer may choose to leave the military based on lack of family acceptance. For this reason, question 44 (Appendix A) was included in the survey to assess the relationship between family acceptance and the officer's intent to leave.

Table 3 Environmental Domain Variable–Definition and Associated Survey Question

Environmental Domain /Operational Definition	**Survey Questions**	
	Used	**Eliminated**
Kinship support –degree of family acceptance towards an officer remaining in the military	**# 44**	**# (41,42,45,46,63,78)°**

°better addressed by another question

Military Specific Work Conditions Domain

Eight variables were evaluated under this domain to assess their association with an officer's intent to leave the military. The influence of deployments, military lifestyle, and military assignment/stabilization on junior officer's intent leave is well documented in the military (Hix, 1998). Multiple government studies have been commissioned to evaluate their influence on Army officer retention. In contrast, the potential impact of these variables on intent to leave has not been addressed in civilian models of turnover. Because this is a study of junior dental officers in the Army, we included this domain in the study. Definitions for variables in this domain were developed by a panel of officers from the Office of the Surgeon General (Dental Corps Branch) and are provided in the respective sections below.

History of deployment

For the purpose of this study, history of deployment is defined as the respondent's history of deployment to a combat zone, specifically to Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF), and its association with an officer's intent to leave. Although the literature suggests that deployment beyond a specific threshold accelerates Soldiers' intent to leave (Hosek & Martorell, 2009; Chaffin et al, 2008), the goal of this study was to assess whether any history of being deployed to a combat zone (yes/no) was associated with intent to leave, so question 4 was recoded to reflect deployment (Appendix B, question 4).

Deployment experience

Deployment experience is defined as the association between an officer's experience while deployed and intent to leave. Because the association is only applicable to officers who have been deployed, the associations were only tabulated for officers who indicated that they have been deployed.

Possibility of future deployment

Possibility of future deployment is defined as the association between an officer's perception of future deployment (war, peacekeeping, etc) on intent to leave and was assessed using question 38 (Appendix A).

Current Assignment

Question 40 (Appendix A) measured the association between an officer's perception of their current duty assignment and their intent to leave. In contrast, question 1 in the demographic domain was used to assess the association between the type of assignment and intent to leave. Thus, question 1 was treated as a demographic control variable, and question 40 was treated as a military specific work condition variable.

Availability of Desirable Assignments

Question 39 (Appendix A) was included to assess the association between the availability of desirable assignments and intent to leave. Chaffin et al. found that potentially desirable assignments may entice officers to stay in the military beyond their current obligation if they perceive the assignment to be desirable (2008). The influence of desirable assignments may reflect a location, specific duty position (administrative, clinical, and supervisory) or may reflect the officer's ability to be co-located with his/her spouse or immediate or supportive family members (e.g., parents, grandparents).

Frequency of Moves

For Soldiers in the military, moving from one duty location to another is an inevitable way of life. Such a life is not typical for most practicing civilian dentists who traditionally set up practice at one location for their entire career. Officers in the Dental Corps receive permanent change in status (PCS) orders usually every 3-4 years that typically require the officers to move to a different location. Such frequent moves are especially challenging for spouses (e.g., finding employment, childcare, and good schools

for their children) and children (e.g., uprooted from school and friends). Frequent moves for junior officers, especially if moving to a less than desirable location, may result in an increased intent to leave.

Military lifestyle

Question 36 (Appendix A) was included to measure the association between an officer's perception of military lifestyle and intent to leave. Lifestyle is a broad term that includes military customs and courtesies (e.g., saluting senior officers as a show of respect), a certain level of regimentation and discipline, mandatory physical fitness requirements, mandatory drug testing, mandatory training (weapons qualification, etc) and frequent moves (PCS).

Respect

Respect is one of the seven Army values and is defined as "treating people as they should be treated" (Army Field Manual 7-21.13). For the purpose of this study, we define and measure respect as the degree to which respect from staff, peers, and leaders meets a respondent's expectations. The expectation from many new dental graduates is that they will receive respect commensurate to their training and status as a dentist. However, as most new graduates enter the Army Dental Corps at the lowest rank (captain) among Dental Corps officers, they may be disillusioned to find themselves at the low end of the officer "pecking order." Such a status may reflect dissatisfaction with the level of anticipated respect received from civilian staff, enlisted personnel and senior officers.

Three questions were used to assess the influence of anticipated respect from various people and their association with intent to leave: 1) civilian staff (question 30); 2) Non-commissioned officers (NCO's) and enlisted personnel (question 31); and 3) senior officers and supervisors (question 32). Because of multicollinearity issues among the 3

questions, they were combined to reflect a composite measure called cumulative respect (Appendix B).

Table 4: Military Specific Work Conditions Domain Variables-Definitions and Associated Survey Questions

Military Specific Work Conditions/Operational Definition	**Survey Questions**	
	Used	**Eliminated**
History of Deployment (to combat zone) Yes/No	**# 4**	**#(3, 5)°**
Deployment experience-officer's perceived experience while deployed	**#37**	**#(6, 7)°**
Possibility of future deployment-impact of future deployment	**#38**	**NA**
Current assignment-officer's perception of his/her current assignment	**#40**	**NA**
Possibility of future desirable military assignment-officer's perception of desirable military assignments	**#39**	**#58***
Frequency of moves-impact of moving to a duty location	**#43**	**NA**
Military lifestyle-respondent's positive or negative perception of military lifestyle and its impact	**#36**	**#(41, 42, 45, 46)°**
Respect-degree to which respect from staff, peers, leaders meets respondents expectations	**#30, 31, 32**	**NA**

*not relevant to research question

°better addressed by another question

Structural Domain

Structural variables represent constraints on intent to stay (leave) stemming from

imminent conditions in the workplace that are not unique to the military work (Kim, 1996). Ten variables were included in this domain.

Pay

Pay is the top reason cited by Army Dental Officers for leaving military service in the Army Dental Care System (ADCS) based on prior surveys (Mazuji et al., 2005; Chaffin et al., 2008). An officer's pay consists of his/her base pay, housing allowance (BAH) and subsistence allowance (BAS). For this reason, six questions queried the influence of pay on an officer's intent to leave. However, question 6 (Appendix A) was selected as the most representative measure for assessing intent to leave.

Bonuses

Bonuses are cash incentives in addition to the officer's salary. Officers are eligible for various bonuses such as: Dental Additional Special Pay, Board Certified Pay, Dental Officer Multiyear Retention Bonus, recruiting (sign on) bonuses and Critical Skills Retention Bonus. These are considered bonuses not salary because not all dental officers are eligible for each bonus, and most bonuses incur an additional payback obligation. The importance of bonuses in retaining dentists is reflected in the number of questions on the survey that address the influence of bonuses on officer's intent to leave. However, question 21 (Appendix A) was assessed to be the most representative measure for this variable.

Benefits

Benefits are a complex multi-dimensional component of non-monetary compensation for service in the military. Benefits (e.g., health, retirement, and family benefits) are often associated with, and used to measure, pay. Because military benefits are a robust component of the total military compensation, inclusion under pay may complicate the diagnostic accuracy of this measure. For this reason, benefits were

considered separately from pay. Two questions (10 and 18, Appendix A) were chosen to assess the influence of benefits on intent to leave.

Quality of Practice

For the purpose of this study, quality of practice is defined as the officer's perception of the quality of care delivered in the Army dental health care system and the influence of that perception on intent to leave. Such a definition may result in multicollinearity with other predictor variables such as utilization of dental skills, autonomy, and satisfaction with military dentistry. However, because these variables are sometimes cited by officers as reasons for staying or leaving the ADCS, they were not combined into a composite measure. The quality of practice on officer's intent to leave was assessed using question 27 (Appendix A).

Professional Development

Price and Mueller define general training as the "degree to which the skills and knowledge of an employee can increase the productivity of different organizations" (Price & Mueller 1981). Such a definition implies increased marketability/opportunity to change jobs for the employee based on his/her acquired training. Because this survey did not specifically address the Price and Mueller definition of professional development professional development was defined as the opportunity for further training (clinical and nonclinical) among dentists in the military. Anecdotally, military dentists profess to value professional development/specialty training for many reasons, one of which equates to increased income potential if and when they leave the military. Only one survey question was utilized due to multicollinearity with other variables. Question 23 (Appendix A) was chosen to represent professional development because it encompassed military and specialty training as well as continuing education.

Autonomy

Price and Mueller define autonomy as "the degree to which an organization has power with respect to its environment" (Uden-Holman, 1992). There were no direct questions pertaining to the influence of autonomy on job satisfaction and intent to leave. Autonomy to one officer may equate to practicing dentistry within the purview of his credentials while another may view autonomy as the absence of bureaucratic constraints. Question 81 (Appendix A) was selected as the best question to assess the influence of autonomy for this study.

Promotional Chances/Opportunities

Price and Mueller (1981) define promotional chances as the "upward vertical mobility within the organization." Bluedorn (1976) further postulates that upward mobility affects turnover by having an effect on satisfaction (the intervening variable) as well as other determinants, such as pay. In the military the majority of officers equate promotional chances as the ability/opportunity for promotion to the next rank. For this reason question 22 (Appendix A) was selected as the best measure for assessing the influence of promotional chances on ITL.

Social Support (Mentorship and Command Support)

Price and Mueller (2004) list social support as one of the structural determinants of turnover. Iverson (1992) further categorized social support into support received from co-workers, peers, friends, mentors and supervisors. The influence of peer and supervisor support in the military system is so important that the Army has developed special mentorship programs to nurture and enhance this support (http: www.armyg1.army.mil/hr/mentorship; accessed 23 April 2010). For this reason, two questions were chosen to represent the influence of social support through mentorship (question 26) and command support (question 47; Appendix A) on intent to leave.

Utilization of Dental Skills

For this study, utilization of dental skills is defined as the respondents' satisfaction with the perceived utilization of their dental skills in their military practice of dentistry. Exit survey comments from departing junior officers indicate some dental officers are frustrated by perceived limitations of their dental skills either through restrictive credentialing or a lack of opportunity to practice comprehensive dentistry (Major Paul Colthirst, personal communication, 29 April 2010). Exit survey comments also reveal dentists assigned to field units (FORSCOM) are frustrated with the lack of time available to practice dentistry in dental clinics (Major Paul Colthirst, personal communication, 29 April 2010). For this reason, question 29 (Appendix A) was included in the survey to assess the association of utilization of dental skills with intent to leave. Although Questions 72 and 73 (Appendix A) addressed the issue of utilization of dental skills, the responses measured satisfaction, thus they were included as part of the intervening domain under "job satisfaction."

Intervening Domain

Intervening variables are defined as those variables which mediate the relationship between the independent variables and the dependent variable, intent to leave (Price, 2001). One intermediate variable, satisfaction with military dentistry, was classified as an intervening variable for this study.

Job Satisfaction with Military Dentistry

For the purpose of this study, job satisfaction is defined as the extent to which the officer is satisfied with his/her clinical practice in the military. There was not a direct question to assess junior officer satisfaction with military dentistry, so three questions addressing satisfaction with certain work situations were substituted as a proxy measure and are referenced in Appendix B.

Table 5: Structural Domain Variables-Definitions and Associated Survey Questions

Structural Domain /Operational Definition	Survey Questions	
	Used	**Eliminated**
Pay= money or its equivalent officers receive for services to their employer	**#20**	**#(11,61,62,64)°**
Bonuses= an incentive paid to retain an officer	**#21**	**#(11,67)°**
Benefits- nonmonetary compensation (e.g., healthcare, retirement, family benefits)	**#10,18**	**#60°**
Quality of Practice= perceived quality of care provided to patients	**#27**	**#14°,28+**
Professional Development= continuing education, residency training	**#23**	**#(24,-26)+**
Autonomy= the perceived level of independence, and discretion of the officer in scheduling work and in determining the procedures to be used in carrying it out	**#81**	**#74°,**
Promotional Chances=perceived chances of being promoted to the next rank or ranks	**#22**	**#15°**
Mentorship= level of perceived peer and supervisor support	**#26**	**#(76-80)°**
Command Support= Level of perceived command support	**#47**	**#(76-80; 82-85)°**
Utilization of Dental Skills=perceived level of satisfaction with utilization of dental skills	**#29**	**#(72, 73)°,**

+ multicollinearity with another question(s)

° better addressed by another question

Table 6: Intervening Domain Variable- Definition and Associated Survey Questions

Intervening Variable Domain /Operational Definition	Survey Questions	
	Used	**Eliminated**
Job satisfaction=satisfaction with military dentistry –	**# 73,74,75**	**#8***

*not relevant to research question

Pathways to Final Questions and Domains

The following figures show: 1) the pathway of questions that were used or eliminated with the resulting final questions that were retained for statistical analyses (Figure 7), and 2) a diagram presenting the final questions categorized into 6 domains and 29 variables (Figure 8).

IRB Approval

Prior to conducting this secondary data analysis study, an exempt expedited format application was sent to the University of Iowa Institutional Review Board (IRB) on 07/08/09. Approval was obtained on 07/09/09.

The Sample

Active duty captains and majors (junior officers) in the Army Dental Corps were chosen as the focus of this study because attrition rates and continuation rates of junior officers over the past decade have been high and low, respectively. This turnover has resulted in a shortfall of majors. This turnover over time will contribute to insufficient numbers of senior grade officers (lieutenant colonel and colonel). If this trend continues, the mission and future leadership of the United States Army Dental Corps will be severely compromised.

Figure 7: Summary flowchart detailing the elimination of questions from the survey (7 sections) and the final questions utilized for this study

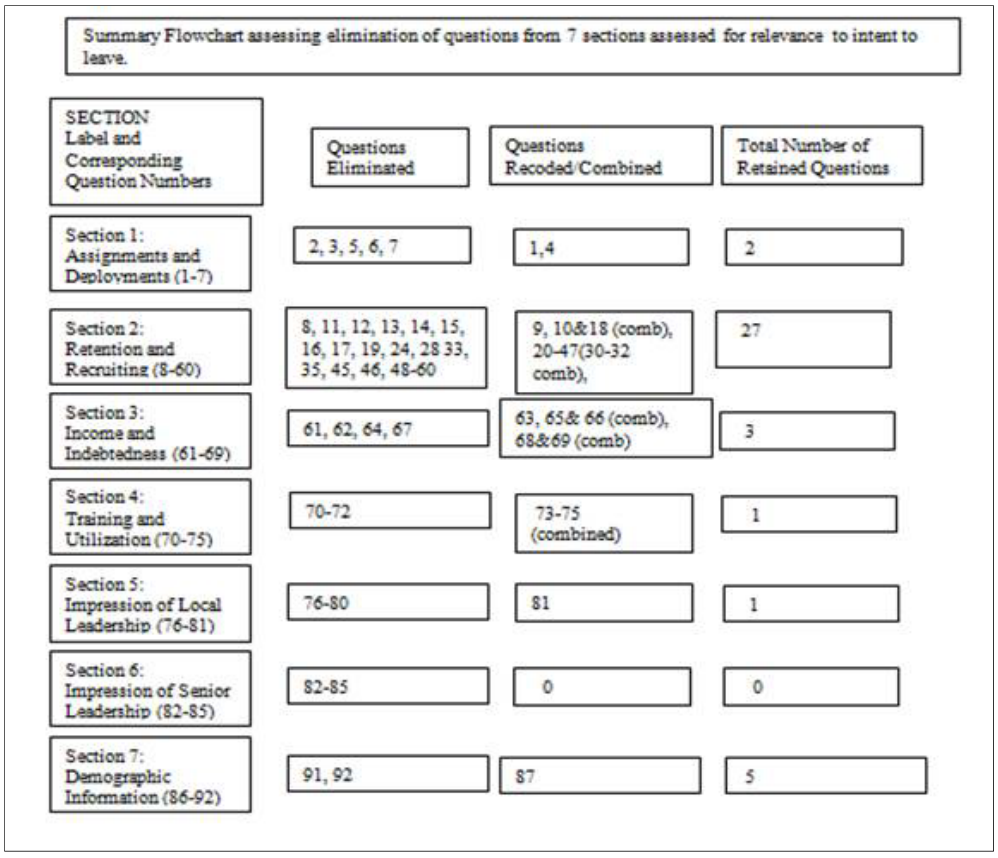
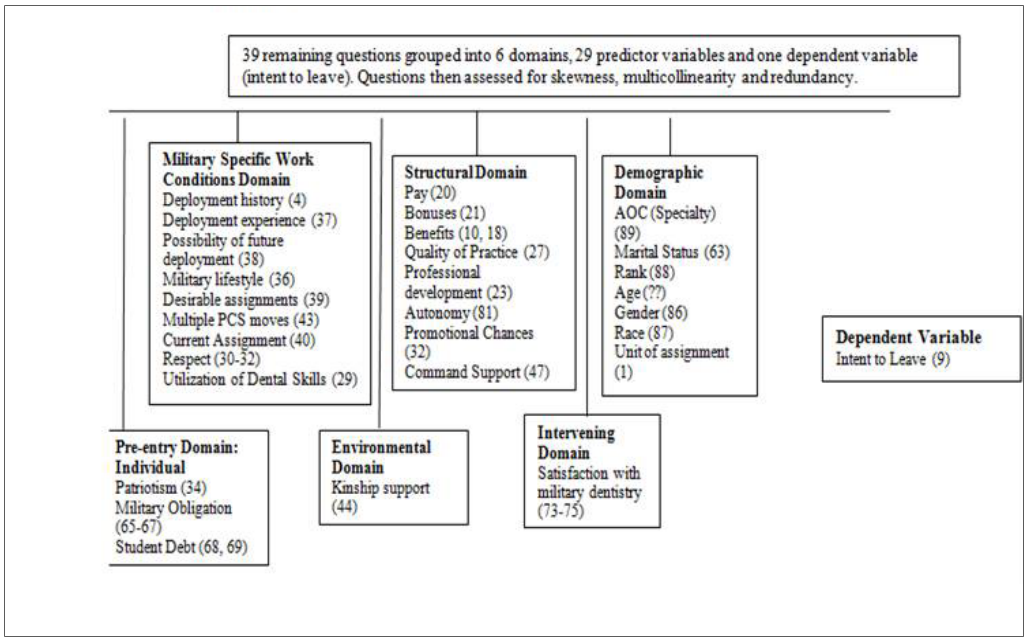


Figure 8: Diagram presenting final questions utilized for this study categorized into 6 domains and 29 variables



Consequently, the senior leadership of the United States Army Dental Corps began to conduct surveys of officers in the United States Army Dental Corps in 2003 in order to identify and address issues related to attrition so that policy changes could be implemented to improve recruiting and retention of Dental Corps officers. Although the survey utilized for this study surveyed both junior and senior dental officers, only the results from junior officers were analyzed for this study.

Survey Instrument

The 2009 Active Component Dental Corps Officer Retention Survey was developed by the Office of the Surgeon General (Dental Corps Branch) and consisted of 91 questions. It was developed by modifying questions from the 2006 Junior Officer Retention Survey and 2007 Senior Officer Retention Survey. The Army pilot tested the survey among 21 Dental Corps officers consisting of both junior and senior officers.

Revisions were made based on feedback from the pilot test. The format of questions on the survey included likert scale multiple choice items and free text responses (Appendix A).

Data Collection

Army Human Resources Command provided a list of email addresses for all Dental Corps Officers on Active Duty as of February 26th 2009. Eligible junior officers (N=577) were sent emails inviting them to complete the 2009 Active Component Dental Corps Officer Retention Survey available on the Army Knowledge Online (AKO) website. The survey link was activated on 16 March 2009 and closed on 7 May 2009. Completion of the survey was voluntary and anonymous. No identifying personal identifying information was required nor solicited. Survey results were received in Excel format from the Office of the Army Surgeon General (Dental Corps Branch) office.

Inclusion/Exclusion Criteria

All active duty Dental Corps officers were invited to participate in the 2009 Army Dental Officer Retention Survey. This included both junior (captains and majors) and senior officers (lieutenant colonels and colonels). However, this study excluded senior officer's responses from the data analyses because the focus of this study was on the retention of junior officers.

Statistical Analysis

This thesis represents a secondary data analysis of the junior officers' responses from the 2009 Army Dental Officer Retention Survey. Univariate, bivariate, linear and logistic regression analyses were conducted using SPSS Version 17 Gradpack Statistical software.

Univariate analyses included measures of central tendency, distribution (skewness), dispersion and frequencies. Bivariate analyses using Chi square tests for

independence were conducted to identify statistically significant relationships between each of the predictor variables and the dependent variables (trinomial: stay/maybe stay/go; binomial: stay vs. go). To determine the relationship between binary predictor variables and the binomial dependent variable (stay vs. go), the Cochran-Mantel-Haenzel (CMH) analyses were conducted.

After determining which questions from the survey were pertinent to the study, thirty variables were chosen for inclusion in the bivariate analyses. Although exploratory models often use high p-values (e.g., $p=0.1$ or $p=0.2$) to determine which significant variables from the bivariate analyses to include into the regression analyses, $p<.05$ was chosen for this study due to the small sample size and the abundance of statistically significant predictor variables at the bivariate level. Two separate bivariate analyses were conducted to assess the statistically significant relationships between predictor variables and intent to leave. The first explored the relationship between the predictor variables and the trinomial dependent variable (stay/maybe stay/go) and the second explored the relationship between predictor variables and the binomial dependent variable (stay vs. go).

Correlation analyses were also conducted to examine the strength and direction of linear relationships between the predictor variables and the trinomial dependent variable (stay/ maybe stay/go). Additionally, correlation analyses were conducted between predictor variables to check for multicollinearity. When collinearity was found, the variable that was most relevant to the study and had the least amount of skewness was utilized for the study.

Linear Regression

Predictor variables that were statistically significant ($p<.05$) at the bivariate level with the trinomial dependent variable (stay/maybe stay/go) were considered for entry into a linear regression analysis. The predictor variables were entered in three steps (blocks)

using forward entry: 1) demographic control variables, 2) intervening variables and 3) all other variables that were statistically significant in the bivariate analyses. Preliminary analyses were conducted to assess assumptions of normality, linearity, multicollinearity and homoscedasticity.

Logistic Regression

Predictor variables that were statistically significant ($p<.05$) at the bivariate level with the binomial dependent variable (stay vs. go) were considered for entry into the binary logistic regression analysis. Because the smallest sample size in the binomial bivariate population (stay) was 36, logistic regression analyses were conducted for each domain in order to reduce the number of variables considered for inclusion into the final logistic regression model. Variables that were statistically significant in the final model of each domain were entered into an overall final logistic model using backward (LR) stepwise method to identify which predictor variables were associated ($p<.05$) with intent to leave.

CHAPTER 4

RESULTS

The purpose of this study was to determine which predictor variables were statistically significantly associated with intent to leave among junior officers in the Army Dental Corps. The results are presented in the following order: 1) response rate/non-response rate bias testing; 2) univariate results of the dependent variable; 3) univariate, bivariate and correlation coefficient analyses of the predictor variables by domain; and 4) results from the linear and logistic regression analyses.

The results from the bivariate analyses include predictor variables run against: 1) a trinomial dependent variable (stay, maybe stay/maybe go, go; n=267), and 2) a binomial dependent variable (stay vs. go; n=190). Variables found to be statistically significant ($p<.05$) in the bivariate analysis were included in the linear (Table 27) and logistic regression analyses (Table 28).

Response Rate and Non-response Bias

Two hundred sixty-seven of the five hundred seventy-seven eligible junior officers completed the survey for a useable response rate of 46.3%. The majority of respondents were young, white, male Captains (Table 7). Additionally, the majority of respondents were general dental officers (63A) assigned to a Dental Activity (DENTAC). Non response bias tests demonstrated respondents were similar to non-respondents by rank, sex, and specialty training status.

Dependent Variable: Intent to Leave

Results from the original question on intent to leave are shown below in Table 8. To enhance power in the bivariate analysis, the original intent to leave variable was collapsed from 6 to 3 levels as shown by the bold subheadings. Fifty-eight percent of respondents indicated they were leaving prior to retirement (go). Twenty-nine percent

reported they were not sure about their intent to leave (maybe stay/maybe go), and only 13.6 percent reported an intent to stay until retirement (stay).

Table 7: Comparison of Respondents vs. Non-respondents (N=577)

Variable	Respondents n=267	Non-respondents n=310	p-value
Age			
26-30	101		
31-35	91		
36-40	47	---	NA
41-45	20		
46-50	5		
51-55	3		
Race			
White	197	---	NA
Nonwhite	60		
Missing	10		
Rank			
CPT	193	241	0.13
MAJ	74	69	
Sex			
Male	210	248	0.69
Female	57	62	
Specialty Training Status (AOC)			
63A-General Dentists	152	171	
63B-Comprehensive Dentists	30	31	0.71
All other specialties	85	108	

Table 8: Descriptive Statistics for Dependent Variable (Intent to Leave)

	Frequency n=267	Percent %
Go :		
After initial tour	63	23.6
After current obligation	34	12.7
After specialty payback	57	21.3
Total	**154**	**57.6**
Maybe stay/Maybe go:		
Beyond current obligation	10	3.7
Not sure	67	25.1
Total	**77**	**28.8**
Stay:		
Stay until retirement	**36**	**13.6**
Total	**267**	**100**

Predictor Variables by Domain

Demographic (Controls) Domain

(Demographic variables are "social categories devoid of any specific content and thus are proxies for general determinants of turnover" (Kim, 1996). They are used in order to "to control for the effects of potentially confounding factors" (Uden-Holman, 1992).

Univariate Analysis

As previously mentioned univariate analyses demonstrated the sample of junior officers to be predominantly young, white, married male captains (Table 9). These results are representative of the population of junior officers. The majority of dental officers were assigned to a Dental Activity (DENTAC) and were 63A's (General

Dentists). All demographic variables, regardless of skewness were advanced for inclusion in the bivariate analyses.

Bivariate Analyses

Table 10 displays the bivariate associations between intent to leave (go) (trinomial and binomial results)) and the demographic predictor variables. Rank and age were found to be negatively correlated with intent to leave (Table 11). In other words, higher ranking and older officers were less likely to report an intent to leave the Army Dental Corps. For example, 40.5% of majors versus 64.2% of captains reported an intent to leave. Similarly, among respondents age 36 and older, 40% or fewer respondents reported an intent to leave the military. In contrast, nearly two thirds of the respondents age 26-35 reported the same. Specialists (AOC=others) and comprehensive dentists (63B's) were less likely to report an intent to leave than junior officers who were general dentists (63A's), but this was significant in the trinomial bivariate analysis only. Though only 3 of the 7 demographic variables were significant in the bivariate analyses, linear and logistic regression analyses were adjusted for all demographic (control) variables.

Pre-entry Individual Variable Domain

(Individual values, attitudes, expectations, and obligations which employees possess prior to employment which may influence their intent to leave).

Univariate Analysis

The majority of officers cited patriotism has no effect on their intent to leave (69.7%; Table12). Thirty-one percent of officers reported they did not have any remaining educational debt (Table 12). However, the majority of officers (69.3%) reported outstanding student debt, with 14.6 % citing a student debt ranging from $101,000 to $336,000. Because the survey questions did not directly address the

respondent's obligation to the military, military obligation was extracted from questions addressing graduate educational indebtedness, scholarship programs and loan repayment programs. The measure for obligation was a composite measure from 2 separate questions (Appendix B). The results for the composite measure are presented in Table 12 below.

Table 9: Descriptive Statistics of Demographic Variables

Variable Sample	Frequency n=267	Percentage %	Skewness
Rank			
Captain	193	72.3	1.001
Major	74	27.7	
Age			
26-30	101	37.8	
31-35	91	34.1	
36-40	47	17.6	
41-45	20	7.5	
46-50	5	1.9	1.107
51-55	3	1.1	
Military Occupational Skill (MOS)			
63A (General Dentist)	152	56.9	
63B (Comprehensive Dentist)	30	11.2	
All others (Endodontist, Periodontist, etc.)	85	31.8	.518
Gender			
Male	210	78.7	1.406
Female	57	21.3	
Race			
White	197	73.8	
Nonwhite	60	22.5	1.268
Missing	10	3.7	
Marital Status			
Married	210	78.7	1.406
Not married	57	21.3	
Unit of assignment			
FORSCOM	25	9.4	
Training	67	25.1	
DENTAC	165	61.8	-.831
Other	10	3.7	

Table 10: Bivariate Analyses of Demographic Variables and Intent to Leave**

	Intent to Leave (3 level)				Intent to Leave (2 level)		
Variable	Stay N/%	MS/MG N/%	Go N/%	p value	Stay N/%	Go N/%	p value
Rank							
CPT	13 (6.7)	56 (29.0)	124 (64.2)	.000*	13 (9.5)	124 (90.5)	.000*
MAJ	23 (31.1)	21 (28.4)	30 (40.5)	C	23 (43.4)	30 (56.6)	MH
Age							
26-30	3 (3.0)	29 (28.7)	69 (68.3)	.000*	3 (4.2)	69 (95.8)	.000*
31-35	8 (8.8)	24 (26.4)	59 (64.8)	C	8 (11.9)	59 (88.1)	C
36-40	11 (23.4)	17 (36.2)	19 (40.4)		11 (36.7)	19 (63.3)	
41-45	10 (50.0)	5 (25.0)	5 (25.0)		10 (66.7)	5 (33.3)	
46-50	2 (40.0)	1 (20.0)	2 (40.0)		2 (50.0)	2 (50.0)	
51-55	2 (66.7)	1 (33.3)	0		2 (100.)	0	
AOC							
63A	15 (9.9)	39 (25.7)	98 (64.5)	.009	15 (13.3)	98 (86.7)	.104
63B	8 (26.7)	13 (43.3)	9 (30.0)	C	8 (47.1)	9 (52.9)	C
Other	13 (15.3)	25 (29.4)	47 (55.3)		13(21.7)	47 (78.3)	
Gender							
Male	31 (14.8)	57 (27.1)	122 (58.1)	.332	31 (20.3)	122 (79.7)	.481
Female	5 (8.8)	20 (35.1)	32 (56.1)	C	5 (13.5	32 (86.5)	MH
Race							
White	27 (13.7)	55 (27.9)	115 (58.4)	.569	27 (19.0)	115 (81.0)	.936
Nonwhite	7 (11.7)	21 (35.0)	32 (53.3)	C	7 (17.9)	32 (82.1)	MH
Marital status							
Not married	7 (12.3)	16 (28.1)	34 (59.6)	.932	7 (17.1)	34 (82.9)	.904
Married	29 (13.8)	61 (29.0)	120 (57.1)	C	29 (19.5)	120 (80.5)	MH
Unit Type							
FORSCOM	4 (16.0)	10 (40.0)	11 (44.0)	.431	4 (26.7)	11 (73.3)	.525
Training	9 (13.4)	18 (26.9)	40 (59.7)	C	9 (18.4)	40 (81.6)	C
DENTAC	21(12.7)	44 (26.7)	100 (60.6)		21 (17.4)	100 (82.6)	
Other	2 (20.0)	5 (50.0)	3 (30.0)		2 (40.0)	3 (60.0)	

* p<.0001

**For Table 10 only, percentages equal 100% across to facilitate interpretation. In all other bivariate tables, the percentages within each cell equal 100% reading down the column.

C: Chi-square Test (Pearson)

MH: (Cochran-Mantel-Haenszel Chi-squareTest)

Table 11: Correlation Coefficients of Demographic Variables and Intent to Leave

	Intent to Leave- Linear Model (trinomial)		Intent to Leave- Logistic Model (binomial)	
	Correlation Coefficient	Final Linear Model[¥]	Correlation Coefficient	Final Logistic Model
Rank	-.299**	R	-.388**	R
Age	-.389**	R	-.495**	R
AOC	-.111*	R	-.118	R
Gender	.023	R	.068	R
Race	-.018	R	.011	R
Marital Status	- .023	R	.025	R
Unit of Assignment	.024	R	.020	R

*Significant at p<.05

** Significant at p< .01

R= Retained for final regression analyses

Table 12: Descriptive Statistics of Pre-entry Variables

Variable Sample	Frequency n=267	Percentage %	Skewness
Patriotism			
Stay/Maybe stay	74	27.7	-.462
No effect	186	69.7	
Maybe go /Go	7	2.6	
Educational Debt			
0	82	30.7	.303
$1500-50,000	80	30.0	
$51,000-100,000	66	24.7	
$101,000-$336,000	39	14.6	
Military Obligation			
Not obligated	24	9.0	-.149
Obligated	243	91.9	

Bivariate Analyses

Although the univariate frequency results show that nearly seventy percent of respondents said that patriotism had no effect on their intent to leave the Army Dental Corps, patriotism was statistically significantly associated with intent to leave in the bivariate analyses. Among officers who planned to stay in the military, 63.9% said patriotism was significantly associated with their desire to stay in the military (Table 13). In contrast, only 21.4% of respondents who reported an intent to leave stated patriotism made them want to stay in the military. For a majority of respondents who intend to leave, patriotism had no effect on intent to leave. Overall, patriotism was weakly correlated with intent to leave (Table 14) and was retained for inclusion into the linear and logistic analysis. In contrast, neither educational debt nor military obligation was

statistically significantly associated with intent to leave with either the binomial or trinomial dependent variable. As a result, neither predictor variable was retained for inclusion into the regression analyses.

Table 13: Bivariate Analyses of Pre-entry Variables and Intent to Leave

	Intent to Leave (3 level))				Intent to Leave (2 level)		
Variable	Stay N/%	MS/MG N/%	Go N/%	p value C/MH	Stay N/%	Go N/%	p value C/MH
Patriotism							
Stay/MS	23(63.9%)	18 (23.4%)	33 (21.4%)		23(63.9%)	33 (21.4%)	.000*
No effect	13(36.1%)	57 (74.0%)	116(75.3%)	.000*	13(36.1%)	116(75.3%)	C
MG/Go	0	2 (2.6%)	5 (3.2%)	C	0	5 (3.2%)	
Educational Debt							
0	15(41.7%)	27 (35.1%)	40 (26.0%)		15(41.7%)	40 (26.0%)	
$1500-50,000	12(33.3%)	21 (27.3%)	47 (30.5%)	.403	12(33.3%)	47 (30.5%)	.160
$51,000-100,000	5 (13.9%)	19(.24.7%)	42 (27.3%)	C	5 (13.9%)	42 (27.3%)	C
$101,000-$336,000	4 (11.1%)	10 (13.0%)	25 (16.2%)		4 (11.1%)	25 (16.2%)	
Military Obligation							
Not obligated	7 (19.4%)	5 (6.5%)	12 (7.8%)	.059	7 (19.4%)	12 (7.8%)	.074
Obligated	29(80.6%)	72 (93.5%)	142(92.2%)	C	29(80.6%)	142(92.2%)	MH

* p<.0001

C: Chi-square Test (Pearson)

MH: (Cochran-Mantel-Haenszel Chi-squareTest)

Table 14: Correlation Coefficients of Pre-entry Variables and Intent to Leave

	Intent to Leave- Linear Model (trinomial)		Intent to Leave- Logistic Model (binomial)	
	Correlation Coefficient	Final Linear Model	Correlation Coefficient	Final Logistic Model
Patriotism	.262**	R	.359**	R
Total Educational Debt	.133	NR	.148	NR
Military obligation	-.102	NR	.-152*	NR

** p<.01

R=Retained for final regression analyses

NR= not retained for final regression analyses

Environmental Domain

(Represent constraints on intent to stay or promote intent to leave resulting from social conditions external to an organization)

Univariate and Bivariate Analyses

Family Acceptance

Univariate and bivariate results indicate that family acceptance is associated with the career decisions of junior officers. Univariate results show that only 5.2% of junior officers reported family acceptance made them consider staying in the military whereas 45.7% of junior officers reported lack of family acceptance made them consider leaving the military (Table 15). Bivariate results show that among respondents who intend to leave the military, 51.3% reported the lack of family acceptance made them want to leave the military whereas only 19.4% of respondents who intend to stay in the military

answered the same. These findings were statistically significant for both the trinomial and binomial dependent variables (Table 16). Family acceptance was weakly and positively correlated with intent to leave (Table 17). In other words, the lower the officer's (perception of his/her) family acceptance for military service, the greater the officer's intent to leave. Family acceptance was retained for inclusion in the linear and logistic regression analysis.

Table 15: Descriptive Statistics of Environmental Variable

Family Acceptance	Frequency	Percent
Stay/Maybe stay	14	5.2
No effect	130	48.7
Maybe go /Go	122	45.7
Missing	1	.4
Total	267	100.0

Table 16: Bivariate Analyses of Environmental Domain Variables and Intent to Leave (% Totals 100% down in columns)

	Intent to Leave (3 level)				Intent to Leave (2 level)		
Family Acceptance	Stay N/%	MS/MG N/%	Go N/%	p value C/MH	Stay N/%	Go N/%	p value C/MH
Stay/MS	4 (11.1)	3(3.9)	7(4.5)	.011*	4(11.1)	7 (4.5)	.002**
Neutral	25(69.4)	37(48.7)	68(44.2)	C	25(69.4)	68(44.2)	C
MG/Go	7(19.4)	36(47.4)	79(51.3)		7(19.4)	79(51.3)	

*p<.05

**p<.01

C: Pearson Chi Square Test

Table 17: Correlations Coefficient of Environmental Variable and Intent to Leave

	Correlation Coefficient	Final Model Linear	Correlation Coefficient	Final Model Logistic
Family Acceptance	.187**	R	.253**	R

**p<.01

R=Retained for final regression analyses

Military Specific Work Conditions Domain

(Work conditions or variables specific to the military which may influence intent to leave.)

Univariate Analysis

At least 25% of respondents (range: 27.0-72.7%) stated that military work conditions were associated with their potential desire to leave the military (Maybe go/Go; Table 18). In contrast, fewer than 20% of respondents reported that military work conditions made them want to stay in the Army Dental Corps. Although only 29.6% of respondents reported a prior history of deployment, 66.7% of respondents indicated the possibility of future deployments made them consider leaving the military. In addition to the variables related to deployment, several other variables were associated with respondent's intent to leave the military. Frequency of moves (PCS) was the variable most frequently identified by respondents' as influencing their intent to leave (72.7%), whereas respect was identified by fewer than 30% of respondents.

Bivariate Analysis

All but one variable in this domain yielded statistically significant associations with intent to leave in the binomial and trinomial bivariate analyses (Table 19). History

of deployment was not statistically significantly associated with intent to leave, thus it was not retained for consideration in the linear and logistic regression analyses.

Since only 29.6% of respondents reported a prior history of deployment, the question assessing the impact of deployment experience on intent to leave was deemed an unreliable indicator of intent to leave due to skewness and was not retained for inclusion into the linear or logistic regression analyses.

The variable addressing the impact of future deployments on career intent demonstrated polarizing and potentially differentiating results between "leavers" and "stayers" among junior officers. Among respondents who reported an intent to stay in the military, 22.2% reported the possibility of future deployments made them want to stay and 27.8 % reported the possibility of future deployments made them want to leave. In contrast, among of respondents who indicated an intent to leave the military only one officer indicated the possibility of future deployments made them want to stay in the military while 74.0% of respondents stated the possibility of future deployments made them want to leave. The possibility of future deployment was moderately correlated with intent to leave and retained for inclusion in the linear and logistic regression analyses.

Among the officers who reported an intent to stay in the military, 44.4% reported military lifestyle made them want to stay or maybe stay in the military. In contrast, 61.0% of officers who expressed an intent to leave the military reported military lifestyle made them want to leave military service. Correlation coefficients for military lifestyle and the dependent variable were statistically significant demonstrating moderate positive correlations at both the trinomial and binomial level.

In the univariate and bivariate analyses, the majority of respondents stated PCS moves either had no effect or were associated with a desire to leave the military. Among officers who indicated an intent to stay in the military, 55.6% reported PCS moves had no effect, while 44.4% indicated PCS moves made them want to maybe leave or leave the military. Among officers who expressed an intent to leave the military, 80.5% indicated

PCS moves made them want to leave the military. PCS moves were positively, but weakly, correlated with intent to leave at both the trinomial and binomial level (Table 20) and were included in linear and logistic regression analyses.

All other variables were statistically significantly associated with intent to leave in the trinomial and binomial bivariate analyses with weak correlation coefficients. Respect was not significant in the binomial analyses, but it was significant in the trinomial bivariate analysis; thus it was advanced for inclusion into both regression analyses.

In summary, all of the variables within the domain "military work conditions," except deployment history were statistically significantly related with intent to leave in either the trinomial or binomial bivariate analyses. All of the statistically significant variables except deployment experience were advanced for inclusion in the linear regression analyses and logistic regression analyses.

Structural Domain

(Structural variables represent constraints on intent to stay (leave) stemming from imminent conditions in the workplace that are not unique to the military work environment (Kim, 1996).

Univariate Analysis

Officers reported salary (58.8%), bonuses (38.2%) and utilization of dental skills (36.3%) as reasons for leaving military service (Table 21). The top reasons cited by officers for staying in the military were autonomy (28.5%) and benefits (25.8%). The majority of junior officers responded that quality of practice (54.3%), professional development (71.9%), promotional opportunities (72.7%) mentorship (68.2%), and command support (67.4%) had no effect on their career intent**.**

Table 18: Descriptive Statistics of Military Work Condition Variables

Variable Sample	Frequency n-267	Percentage	Skewness
Deploy Hx			
Yes	79	29.6%	.888
No	186	69.7%	
Deploy Experience			
Stay/MS	3	3.8%	
No effect	39	49.3%	.149
MG/Go	37	46.8.0%	
Future deployment			
Stay/MS	9	3.4%	
No effect	80	30.0%	-1.163
MG/Go	178	66.7%	
PCS moves			
Stay/MS	2	. 7%	-1.202
No effect	71	26.6%	
MG/Go	194	72.7%	
Military Lifestyle			
Stay/MS	23	8.6%	-.582
No effect	116	43.4%	
MG/Go	128	47.9%	
Desirable Assignments			
Stay/MS	35	13.1%	-.480
No effect	116	43.4%	
MG/Go	116	43.4%	
Current Assignment			
Stay/MS	48	18.0%	-.170
No effect	137	51.3%	
MG/Go	82	30.7%	
Respect			
Stay/MS	24	9.0%	-.014
No effect	171	64.0%	
MG/Go	72	27.0%	

Table 19: Bivariate Analyses of Military Work Condition Variables and Intent to Leave

	Intent to Leave (3 level))				Intent to Leave (2 level)		
Variable	Stay N/%	MS/MG N/%	Go N/%	p value C/MH	Stay N/%	Go N/%	p value C/MH
Deployed							
Ever depl	15 (41.7)	18 (24.0)	46 (29.8)	.163	15 (41.7)	46 (29.9)	.174
Never depl	21 (58.3)	57 (76.0)	108 (70.1)	C	21 (58.7)	108 (70.1)	MH
Deploy exp							
Stay/MS	8 (22.2)	0	3 (4.1)		8 (22.2)	3 (4.1)	
No effect	23 (63.9)	48 (62.3)	97 (62.9)	.000*	23 (63.9)	97 (62.9)	.000*
MG/GO	5 (23.9)	29 (37.7)	54 (33.0)	C	5 (23.9)	54 (33.0)	C
Future depl							
StayMS	8 (22.2)	0	1 (.6)	.000*	8 (22.2)	1 (.6)	.000*
No effect	18 (50.0)	23 (29.9)	39 (25.3)		18 (50.0)	39 (25.3)	
MG/Go	10 (27.8)	54 (70.1)	114 (74.0)	C	10 (27.8)	114 (74.0)	C
Mil Lifestyle							
Stay/MS	16 (44.4)	5 (6.5)	2 (1.3)	.000*	16 (44.4)	2 (1.3)	.000*
No effect	17 (47.2)	41 (53.2)	58 (37.7)		17 (47.2)	58 (37.7)	
MG /Go	3 (8.3)	31 (40.3)	94 (61.0)	C	3 (8.3)	94 (61.0)	C
PCS moves							
Stay/MS	0	0	2 (1.3)		0	2 (1.3)	
No effect	20 (55.6)	23 (29.9)	28 (18.2)	.000*	20 (55.6)	28 (18.2)	.000*
MG/Go	16 (44.4)	54 (70.1)	124 (80.5)	C	16 (44.4)	124 (80.5)	C
Desir Assg							
Stay/MS	11 (30.6)	8 (10.4)	16 (10.4)		11 (30.6)	16 (10.4)	
No effect	21 (58.3)	38 (49.4)	57 (37.0)	.000*	21 (58.3)	57 (37.0)	.000*
MG/Go	4 (11.1)	31 (40.3)	81 (52.6)	C	4 (11.1)	81 (52.6)	C
Curr Assg							
Stay/MG	12 (33.3)	17 (22.1)	19 (12.3)		12 (33.3)	19 (12.3)	
No effect	19 (52.8)	46 (59.7)	72 (46.8)	.000*	19 (52.8)	72 (46.8)	.001*
MG/Go	5 (13.9)	14 (18.2)	63 (40.9)	C	5 (13.9)	63 (40.9)	C
Respect							
Stay/MS	5 (13.9)	10 (13.0)	9 (5.8)		5 (13.9)	9 (5.8)	
No effect	23 (63.9)	56 (72.7)	92 (59.7)	.009	23 (63.9)	92 (59.7)	.136
MG/GO	8 (22.2)	11 (14.3)	53 (34.4)	C	8 (22.2)	53 (34.4)	C

* p<.0001

C: Chi-square Test (Pearson)

MH: (Cochran-Mantel- Haenszel Chi-squareTest)

Table 20: Correlation Coefficients for Military Work Conditions Variables & Intent to Leave

	Correlation Coeff	Final Linear Model	Correlation Coefficient	Final Logistic Model
Deployed	-.048	NR	-.099	NR
Deployment Experience	.139*	NR	.256**	NR
Future Deployment	.346**	R	.460**	R
Military Lifestyle	.476**	R	.571**	R
PCS moves	.237**	R	.291**	R
Desirable Assignment	.274**	R	.343**	R
Current Assignment	.273**	R	.271**	R
Respect	.180**	R	.137	R^

*p<.05

**p<.01

R=Retained for regression analyses

NR=Not retained for regression analyses
^ Retained because significant in trinomial bivariate analysis

Bivariate Analysis

All variables in this domain proved to be statistically significantly associated with intent to leave in both the trinomial and binomial the bivariate analyses (Table 22). All variables, with the exception of benefits, were positively correlated with intent to leave (Table 23). The majority of officers, regardless if they were "leavers" or "stayers" in the binomial bivariate analyses, reported that the following predictors had "no effect" on

their intent to leave: quality of practice, promotional chances, mentorship, and command support.

Differences among "leavers" and "stayers" were apparent. Among officers who indicated an intent to stay, benefits (66.7%), professional development (52.8%), bonuses (47.1%) and autonomy (44.4%) were reported as predictors for making them consider staying in the military. In contrast, for officers indicating an intent to leave, benefits (83.1%), salaries (64.9%), utilization of dental skills (48.1%), and bonuses (44.4%) were reported as reasons for making them want to leave the military. In summary, all the variables in this domain were statistically significantly associated with intent to leave and were included in the linear and logistic regression analyses.

Intervening Domain (Satisfaction with Military Dentistry)

(Intervening variables are defined as those variables which mediate the relationship between the independent variables and the dependent variable, intent to leave (Price, 2001). One intermediate variable, satisfaction with military dentistry, was classified as an intervening variable for this study.).

Univariate and Bivariate Analyses

In the univariate analysis the majority of junior dental officers (52.8%) reported they were satisfied with military dentistry (Table 24). Bivariate analyses showed that among respondents who reported an intent to stay, 71.4% of respondents were satisfied with military dentistry, and 2.9% of respondents were unsatisfied with military dentistry.

Bivariate analyses showed that among respondents who reported an intent to stay, 71.4% of respondents were satisfied with military dentistry, and 2.9% of respondents were unsatisfied with military dentistry. In contrast, among respondents who reported an intent to leave, only 44.2% reported satisfaction with military dentistry, while 22.7% reported dissatisfaction with military dentistry (Table 25). Satisfaction with military

dentistry was significantly, but weakly, correlated with intent to leave the military (Table 26). It was retained for inclusion into the final linear and logistic regression analyses.

Table 21: Descriptive Statistics of Structural Variables

Variable Sample	Number N=267	Percentage	Skewness
Salary			
Stay/MS	33	12.4	-.941
No effect	77	28.8	
MG/Go	157	58.8	
Bonus			
Stay/MS	45	16.9	-.335
No effect	120	44.9	
MG/Go	102	38.2	
Benefits^			
Ranked among top two reasons (for staying in military)	69	25.8	1.10
Not in top two	198	74.2	
Quality of Practice			
Stay/MS	50	18.7	-.098
No effect	145	54.3	
MG/Go	72	27.0	
Professional Development			
Stay/MS	46	17.2	
No effect	192	71.9	-.073
MG/Go	29	10.9	
Autonomy			
Stay/MS	76	28.5	-.026
No effect	110	41.2	
MG/Go	80	30.0	
Promotional opportunities			
Stay/MS	27	10.1	.098
No effect	194	72.7	
MG/Go	46	17.2	
Mentorship			
Stay/MS	43	16.1	0
No effect	182	68.2	
MG/Go	42	15.7	
Command Support			
Stay/MS	24	9.0	.057
No effect	180	67.4	
MG/Go	63	23.6	
Utilization of Dental Skills			
Stay/MS	41	15.4	
No effect	129	48.3	-.300
MG/Go	97	36.3	

^ In top two reasons for joining the military or not in top two reasons for joining the military (free text responses)

Table 22: Bivariate Analyses of Structural Variables and Intent to Leave

	Intent to Leave (3 level)				Intent to Leave (2 level)		
Variable	Stay N/%	MS/MG N/%	Go N/%	p value	Stay N/%	Go N/%	p value C/MH
Salary							
Stay/MS	11 (30.6)	7 (9.1)	15 (9.7)	.000*	11 (30.6)	15 (9.7)	.000*
No effect	17 (47.2)	21 (27.3)	39 (25.3)	C	17 (47.2)	39 (25.3)	
MG/Go	8 (22.2)	49 (63.6)	100 (64.9)		8 (22.2)	100(64.9)	C
Bonus							
Stay/MS	16 (44.4)	11 (14.3)	18 (11.7)	.000*	16 (44.4)	18 (11.7)	.000*
No effect	14 (38.9)	43 (55.8)	63 (40.9)	C	14 (38.9)	63 (40.9)	
MG/Go	6 (16.7)	23 (29.9)	73 (47.4)		6 (16.7)	73 (47.4)	C
Benefits^							
In top two	24 (66.7)	19 (24.7)	26 (16.9)	.000*	24 (66.7)	26 (16.9)	.000*
Not in top two	12 (33.3)	58 (75.3)	128 (83.1)	C	12 (33.3)	128 (83.1)	MH
Quality of Practice							
Stay/MS	14 (38.9)	16 (20.8)	20 (13.0)	.000*	14 (38.9)	20 (13.0)	.000*
No effect	20 (55.6)	46 (59.7)	79 (51.3)	C	20 (55.6)	79 (51.3)	
MG/Go	2 (5.6)	15 (19.5)	55 (35.7)		2 (5.6)	55 (35.7)	C
Professional Development							
Stay/MS	19 (52.8)	13 (16.9)	14 (9.1)	.000*	19 (52.8)	14 (9.1)	.000*
No effect	15 (41.7)	61 (79.2)	116 (75.3)	C	15 (41.7)	116 (75.3)	
MG/Go	2 (5.6)	3 (3.9)	24 (15.6)		2 (5.6)	24 (15.6)	C
Autonomy							
Stay/MS	16 (44.4)	24 (31.2)	36 (23.5)	.000*	16 (44.4)	36 (23.5)	.010**
No effect	14 (38.9)	41 (53.2)	55 (35.9)	C	14 (38.9)	55 (35.9)	
MG/Go	6 (16.7)	12 (15.6)	62 (40.5)		6 (16.7)	62 (40.5)	C
Promotional Opportunities							
Stay/MS	12 (33.3)	6 (7.8)	9 (5.8)	.000*	12 (33.3)	9 (5.8)	.000*
No effect	19 (52.8)	63 (81.8)	112 (72.7)	C	19 (52.8)	112 (72.7)	
MG/Go	5 (13.9)	8 (10.4)	33 (21.4)		5 (13.9)	33 (21.4)	C
Mentorship							
Stay/MS	9 (25.0)	17 (22.1)	17 (11.0)	.003**	9 (25.0)	17 (11.0)	.006*
No effect	26 (72.2)	53 (68.8)	103 (66.9)	C	26 (72.2)	103 (66.9)	
MG/Go	1 (2.8)	7 (9.1)	34 (22.1)		1 (2.5)	34 (22.1)	C
Command Support							
Stay/MS	6 (16.7)	8 (10.4)	10 (6.5)	.000*	6 (16.7)	10 (6.5)	.001**
No effect	29 (80.6)	52 (67.5)	99 (64.3)	C	29 (80.6)	99 (64.3)	
MG/Go	1 (2.8)	17 (22.1)	45 (29.2)		1 (2.8)	45 (29.2)	C
Utilization of dental skills							
Stay/MS	12 (33.3)	13 (16,9)	16 (10.4)	.000*	12 (33.3)	16 (10.4)	.000*
No effect	22 (61.1)	43 (55.8)	64 (41.6)	C	22 (61.1)	64 (41.6)	
MG/Go	2 (5.6)	21 (27.3)	74 (48.1)		2 (5.6)	74 (48.1)	C

^ In top two reasons for joining the military or not in top two reasons for joining the military (free text responses)

*p<.0001

**p<.05

C: Chi-square Test (Pearson)

MH: (Cochran-Mantel Haenszel Chi-squareTest)

Table 23: Correlation Coefficients of Structural Variables and Intent to Leave

	Correlation Coefficient	Final Linear Model	Correlation Coefficient	Final Logistic Model
Salary	.246**	R	.346**	R
Bonus	.292**	R	.339**	R
Benefits	-.339**	R	-.443**	R
Quality of Practice	.290**	R	.322**	R
Professional Development	.342**	R	.379**	R
Autonomy	.234**	R	.222**	R
Promotional Opportunities	.227**	R	.250**	R
Mentorship	.235**	R	.231**	R
Command support	.215**	R	.261**	R
Utilization of dental skills	.328**	R	.369**	R

**p<.01

R= Retained for regression analyses

Table 24: Descriptive Statistics of Intervening Variable

Satisfaction with military dentistry	Frequency N=267	Percent
Satisfied	141	52.8
Neutral	79	29.6
Unsatisfied	46	17.2

Table 25: Bivariate Analyses of Intervening Variable and Intent to Leave (% Totals 100% down in columns)

	Intent to Leave (3 level))				Intent to Leave (2 level)		
Variable	Stay N/%	MS/MG N/%	Go N/%	p value	Stay N/%	Go N/%	p value
Satisfaction				.			.
Satisfied	25 (71.4)	48 (62.3)	68 (44.2)	005*	25 (71.4)	68 (44.2)	005*
Neutral	9 (25.7)	19 (24.7)	51 (33.1)		9 (25.7)	51 (33.1)	
Unsatisfied	1 (2.9)	10 (13.0)	35 (22.7)		1 (2.9)	35 (22.7)	

*p<.01

Table 26: Correlation Coefficients of Intervening Variable and Intent to Leave

Variable	Correlation Coefficient	Final Linear Model	Correlation Coefficient	Final Logistic Model
Satisfaction with military dentistry	.232*	R	.238*	R

p<.01

R= Retained for regression analyses

Overall Bivariate Analyses Summary

In summary, 25 of the 29 variables (Figure 8, page 66) that were analyzed at the bivariate level were advanced for inclusion into the linear and logistic regression analyses.

Linear and Logistic Regression Models

The following section contains: 1) results of the linear regression analysis; 2) results of logistic regression analysis; and 3) a summary table comparing the results of the final linear and logistic regression models.

Linear Regression

Hierarchical multiple linear regression was used to assess the ability of 25 predictor variables to predict intent to leave after controlling for the influence of age, rank, gender, ethnicity, marital status, specialty status and unit of assignment. Entry of demographic control variables in Step 1 explained 15.0% of the variance in intent to leave. After entry of the intervening variable, job satisfaction with military dentistry in Step 2, the total explained variance increased to 19.6%. After the remaining statistically significant ($p<.05$) predictor variables from the trinomial bivariate analyses were entered in Step 3, the total variance explained by the model was 39.3%. Three control and three additional predictor variables were statistically significantly associated with intent to leave in the final model (Table27): unit of assignment ($p<.009$, Beta=.144); specialty training status ($p< .047$, Beta=.098) ; age ($p<.002$, Beta= -.133); military lifestyle ($p<.001$, Beta=.236); benefits ($p<.000$, Beta= -.408) and professional development ($p<.023$, Beta=.194). Age and benefits were negatively correlated with intent to leave. (e.g., for each unit increase in age, respondent's intent to leave decreased by 0.133 units), whereas the other four statistically significant predictor variables were positively correlated with intent to leave (e.g., for each unit increase in specialty training status respondents' intent to leave increased by .098).

Logistic Regression

Binary stepwise logistic regression was performed to assess the associations between the twenty-five predictor variables that were statistically significantly associated with the binary dependent variable (stay vs. go) in the bivariate analyses. In order to minimize the number of variables that were considered for inclusion into the final model, separate logistic regression analyses were first performed by domain. In total, ten predictor variables were found to be statistically significantly ($p<0.05$) associated with intent to leave within the 6 domains: age, military lifestyle,

Table 27: Final Linear Regression Results (n=267)

Variable	Beta*	Std. Error*	p value	95% Confidence Interval	
				Lower	Upper
(Constant)	1.001	.399	.013	.215	1.787
Unit of assignment	.144	.054	.009	.037	.251
Specialty Training Status	.098	.049	.047	.001	.196
Age in years	-.133	.043	.002	-.219	.048
Military lifestyle	.236	.072	.001	.094	.377
Professional development	.194	.085	.023	.027	.361
Military benefits	-.408	.085	.000	-.576	-.241

*Unstandardized coefficients

possibility of future deployment, utilization of dental skills, benefits, professional development, command support, patriotism, family acceptance, and satisfaction with military dentistry. Backwards (LR) stepwise regression identified four predictor variables as being statistically significantly associated with intent to leave in the final logistic regression model: benefits, military lifestyle, professional development, and age (Table 28).

Holding all other variables constant, officers who indicated benefits as one of their top reasons for staying in the military were less likely to say they were they were leaving the Army Dental Corps compared to officers who did not put benefits as one of their top reasons for staying in the military. In contrast, officers who reported military lifestyle made them want to leave the military (go) were 39.0 times as likely to indicate they were leaving compared to officers who said that military lifestyle made them want to stay. Similarly, respondents who said professional development made them want to leave were 11.8 times as likely to report an intent to leave compared to officers who said professional development made them want to stay. Finally, younger age was positively correlated with intent to leave. Younger officers were 9.92 times as likely to report an intent to leave than the older officers. The final model explained between 44.4% (Cox and Snell R square) and 76.9 % (Nagelkerke R square) of the variance for intent to leave.

Table 28: Final Logistic Regression Results (n=190)

Variable	B	p value	Odds Ratio	95% C.I.for EXP(B)	
				Lower	Upper
Professional Development (Go vs. Stay*)	2.48	.013	11.888	1.674	84.41
Military Lifestyle (Go vs. stay*)	3.66	.005	39.02	2.974	512.01
Military Benefits (In top two reasons for staying vs. not in top two*)	-3.51	.000	.030	.005	169.00
Age (26-30 years of age vs. 51-55 years of age*)	2.29	.037	9.918	1.155	85.16
Constant	3.73	.040	.024		

* Reference Group

Summary of Results

Overall, 57.6 % of respondents reported an intent to leave the Army Dental Corps prior to retirement and an additional 28.8% were uncertain about their retirement plans. Although univariate and bivariate analyses revealed the majority of the predictor variables to be statistically significant predictors of intent to leave, linear and logistic regression analyses revealed that only six or four predictor variables, respectively, remained statistically significantly associated with intent to leave in the final models. A comparison of the statistically significant predictor variables from the final linear and logistic regression models are presented in Table 29.

Table 29: Summary Table of the Statistically Significant Predictor Variables Associated with Intent to Leave in Final Linear and Logistic Regression Models

Linear Regression	**p value**	**Logistic Regression**	p value
Military Benefits *	<.001	Military Benefits *	<.001
Military lifestyle	.001	Military Lifestyle	.005
Age *	.002	Age	.037
Unit of assignment (UA)	.009		
Professional Development	.023	Professional Development	.013
Specialty Training Status (AOC)	.047		

*Negatively associated with intent to leave

CHAPTER 5

DISCUSSION

Overview of the Study and its Significance

The purpose of this study was to determine which predictor variables are statistically significantly associated with intent to leave the military service among junior officers in the Army Dental Corps. This study is important because improved retention is necessary in order to keep a stable workforce of experienced dental officers in the Army Dental Corps. If the current rate of attrition continues, there is a strong likelihood that there will be a shortage of dental officers in the senior ranks as well. Such a shortage may result in a lack of clinicians able to provide dental care as well as officers able or willing to take leadership positions. This shortfall of senior officers may result in the Dental Corps "defaulting" its leadership positions, such as commander of dental units, to other more robust Corps (e.g. Medical Service Corps, Nurse Corps, Medical Corps, etc.) within the Army Medical Department (AMEDD).

The Price and Mueller Causal Model for Turnover served as a template in the design, analysis and interpretation of study results (Price, 2004). Because this study on the retention of junior Army Corps dental officers relied on a secondary data analysis, not all of the survey questions were conducive to conducting a confirmatory analysis of the Price and Mueller model. As a result, this study is an exploratory study to compare military turnover variables to civilian workforce studies.

Civilian Workforce Studies

There have been numerous published studies on turnover in the civilian and federal workforce as cited in the literature review of this study. The strongest studies correlate actual attrition rates (voluntary quit rates) with variables measuring intent to leave or stay as well as other predictor variables (Steel and Ovale, 1984, Hom & Griffeth, 1995; Griffeth et al. 2000). Unlike our study, few civilian studies query whether the

employee is considering staying to retirement (e.g. Billingsley & Cross, 1992). In the current economic recession with corporate downsizing, massive layoffs, and high unemployment, staying to retirement for employees and employers is becoming less imaginable and possibly less desirable. Additionally, some studies suggest that Generation X'ers and Y'ers don't believe that staying with one company until retirement is optimal for their career plans (Lancaster & Stillman, 2002).

From an organizational and human resource management perspective, employee turnover has been linked with the opportunity to introduce into the workplace new ideas, organization, technology, and procedures. It has also been associated with the opportunity to replace poor performers (Congressional Budget Office, Report to Congress. Employee Turnover in the Federal Government, February 1986). According to Holtom et al., "In the early 2000's, the dotcom bust and off-shoring rendered voluntary turnover less worrisome to some organizations" (2008). However, most corporations, including the military, want to keep an employee long enough to get their human capital investment (training, recruitment, etc) in an employee back (Stacey, 2006). The investment in training Soldiers, and especially medical professionals, is expensive. Stacey reported that the in house cost to train a single endodontist for the Navy Dental Corps averaged $653,812 (2006). Thus the goal/benefit of analyzing results from civilian and military studies on turnover may not be so much to promote the concept of careerism or employment until retirement as much as to delay turnover among high valued or the most talented employees (Wardynski, C., Lyle, D.S., & Colarusso,M.J. , 2009).

Review of the Results of this Study

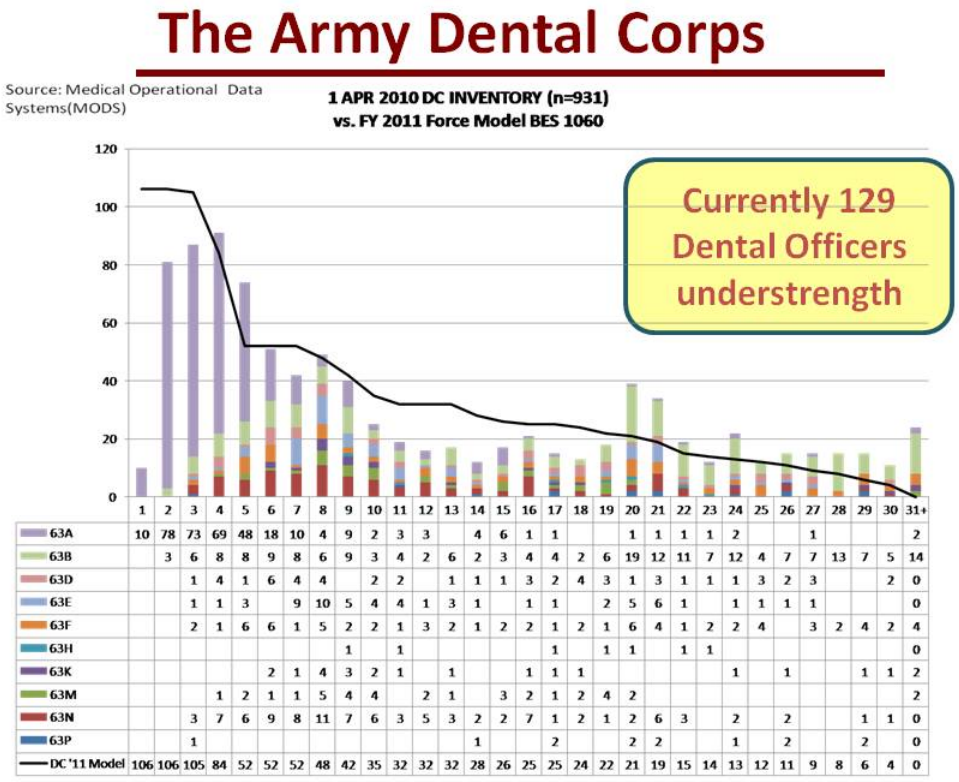
Comparison of Univariate Results with Military Workforce Studies

Fifty-eight percent of respondents reported an intent to leave the Army Dental Corps prior to retirement, and another 28.8% reported they were not sure if they were staying until retirement. These results are consistent with recent published reports from

the Government Accountability Office and the Rand Corporation which project end strength shortfalls for certain year group cohorts. According to a recent Rand report on the retention of Air Force dental officers (Keating et al. 2009), "[t]he retention of dentists has become a major source of concern in recent years." Similarly, a 2007 GAO report to Congress projected a shortfall in under-filled dental officer positions for majors of 49% (i.e. a shortfall of 51 percent) which exceeded all other Corps in the Army Medical Department (AMEDD) (GAO-07-234 Military Personnel, 2007). The GAO conclusion was based on in-depth analyses of Army officer accession rates and continuation rates. In contrast, a recent GAO report on overall retention among medical professionals in the three branches of the Armed Forces concluded: "For active component dentists, annual retention rates were between 82 percent and 91 percent" (GAO-09-469R Military Personnel, 2009).

However, the 2009 GAO report did not publish attrition or continuation rates for junior officers. It may be the shortfall of junior officers in the Army Dental Corps, as well as in the Navy and Air Force, is being partially masked by the increased retention rates of senior officers due to increased retention bonuses and new policies which allow certain senior officers to apply for a continuation of service beyond the 30 year mandatory retirement. Figure 9 shows the influence of these new continuation policies at 31+ years on retention rates among senior officers in the Dental Corps.

Figure 9: Current Inventory of Dental Corps Officers by Specialty and Years in Service



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31+
63A	10	78	73	69	48	18	10	4	9	2	3	3		4	6	1	1			1	1	1	1	2			1				2
63B		3	6	8	8	9	8	6	9	3	4	2	6	2	3	4	4	2	6	19	12	11	7	12	4	7	7	13	7	5	14
63D			1	4	1	6	4	4		2	2		1	1	1	3	2	4	3	1	3	1	1	1	3	2	3			2	0
63E			1	1	3		9	10	5	4	4	1	3	1		1	1		2	5	6	1		1	1	1	1				0
63F			2	1	6	6	1	5	2	2	1	3	2	1	2	2	1	2	1	6	4	1	2	2	4		3	2	4	2	4
63H									1		1						1		1	1		1	1								0
63K						2	1	4	3	2	1		1			1	1	1						1		1			1	1	2
63M				1	2	1	1	5	4	4		2	1		3	2	1	2	4	2											2
63N			3	7	6	9	8	11	7	6	3	5	3	2	2	7	1	2	1	2	6	3		2		2			1	1	0
63P			1											1			2			2	2			1		2			2		0
DC '11 Model	106	106	105	84	52	52	52	48	42	35	32	32	32	28	26	25	25	24	22	21	19	15	14	13	12	11	9	8	6	4	0

Source: Update from Office of the Surgeon General- Dental Corps Branch, Dencom Commander's Conference, April 29th, 2009.

Review of the Results by Domain

Demographic (Controls) Domain

(Demographic variables are "social categories devoid of any specific content and thus are proxies for general determinants of turnover" (Kim, 1996). They are used in order to "to control for the effects of potentially confounding factors" (Uden-Holman, 1992)).

Univariate analyses revealed the majority of the respondents were young, white, male, married junior officers who were general dentists assigned to a DENTAC. Price

(2004) has stated that "with a sophisticated model and psychologically sound measures the demographic variables should not be important," thus several Price and Mueller workforce models on turnover only include demographic variables as a means to "check the exploratory power of the model" (Price, 1995). However, our study, as well as one recent meta-analysis (Griffith et al, 2000), found demographic variables to be statistically significantly associated with turnover.

This study found four demographic predictor variables to be statistically significantly associated with intent to leave in the bivariate analyses: age, rank, area of concentration (AOC=specialty training status) and unit of assignment. All of the demographic variables, regardless of their statistical significance with intent to leave, were included in both the linear and logistic regression analyses. The final model associated with the hierarchical linear regression analysis revealed that age, AOC, and unit of assignment were statistically significantly associated with intent to leave. In contrast, only age remained statistically significantly associated with intent to leave in the final logistic regression model.

The results for this study are consistent with the literature (Ng & Feldman, 2009). Age has been shown to be inversely correlated with intent to leave (meaning the older the employee, the less likely she or he is to voluntarily leave an organization). The same association holds true for rank or status in the organization (Muchinsky & Tuttle, 1978; Griffeth et al, 2000). In other words, the higher the rank or employee tenure, the less likely he or she is to voluntarily leave the organization. Specialty training status has been shown to be positively correlated with intent to leave, but often is presented in terms of general training in other models. Our findings are consistent with published turnover research which found that training which increased an employee's skills may result in increased turnover because such training makes the employee more marketable and competitive for jobs outside the organization (Glance et al. 1997, Griffeth et al, 2000). The influence of unit of assignment on turnover has been more extensively researched

and published by the Department of Defense than in the civilian workforce literature. Studies commissioned by the Department of Defense found mixed results among turnover rates among service members assigned to combat units compared to those that were not (Fricker, R.D., 2004; Quester et al., 2009; Badger, G.,2004). This may be due to the fact that Soldiers assigned to combat units possess skills (e.g. sniper) that are less marketable in the civilian sector compared to Soldiers assigned to noncombat units. Such is not the case with dentists assigned to combat units.[21]

Pre-entry Domain

(Individual values, attitudes, expectations, and obligations which employees possess prior to employment which may influence their intent to leave).

This study examined three variables that the authors believed may be important based on prior Army Dental Care System (ADCS) surveys that examined officers' motivation for joining the military. These variables included: patriotism, educational debt and military obligation. Although none of these variables were directly in the Price and Mueller models, certain attributes may have been captured under different variables (e.g. commitment, job motivation, met expectations). Free text responses (questions 49 and 50; Appendix A) indicated that while patriotism, student debt and military obligation

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[21] From past dental corps surveys, officers serving in field units (FORSCOM) indicate less satisfaction and a greater intent to leave than those assigned to a strictly clinical setting. Typically, Soldiers assigned to field units are not owned by the Dental Command (DENCOM), but rather by Forces Command (FORSCOM) with units such as the 82nd Airborne, and 3rd Infantry Division. These dental officers are "loaned" to the dental clinics from their assigned units where they may practice (usually part time). Such a relationship results in mixed loyalties and expectations. Past dental corps surveys indicate that officers assigned to field units are dissatisfied with this arrangement, which results in an accelerated intent to leave among these officers (Mazuji et al., 2005; Chaffin et al. 2008).

may be important reasons for officers to enter the Dental Corps, their association with intent to leave, based on this study's results is ambiguous at best.

Questions assessing student debt (68 and 69) and military obligation (65 and 66) were descriptive in nature. Results at the univariate level are consistent with the literature, which found the majority of students joining the military do so because of a service obligation resulting from scholarships or loan repayment programs (Chmar, J. 2007). In addition, our study validated the findings from previous Dental Corps surveys (Mazuji et al., 2005; Chaffin et al. 2008) which found the majority of dental students joining the military do so encumbered by substantial student debt despite having full Army scholarships or loan repayment to help defray their educational debt. Though these results may be surprising, they were not unexpected based on results from previous ADCS surveys (Chaffin et al., 2008).

Among the three variables included within the pre-entry domain, only patriotism was statistically significantly associated with intent to leave at the bivariate level of analyses (binomial and trinomial) and advanced for inclusion into the regression analysis. Despite the majority of officers citing patriotism as having no effect on intent to leave or stay in the univariate analysis (69.7%), bivariate analysis revealed patriotism to be significantly associated with intent to leave. Among respondents who indicated an intent to stay in the ADCS until retirement, 63.9% stated that patriotism made them want to stay. In contrast, among respondents who indicated at intent to leave the ACDS, only 21.4% stated patriotism made them want to stay. Although patriotism was significant at the bivariate level, it was not significantly associated with intent to leave in either the linear or logistic regression analyses.

Patriotism and its role in retention has not been explored specifically in turnover research. Patriotism reflects both personal values and organizational commitment. There has been substantial research (Griffeth et al, 2000; Hom and Griffeth, 1995) conducted on the relationship between employee values, their perceived commitment toward an

organization and turnover. Meta-analyses of previous studies on turnover found an inverse relationship between organizational commitment and turnover (meaning the stronger the commitment, the less likely one is to leave an organization).

There was one unexpected result in this domain. Despite anecdotal reports from officers who claim they cannot afford to stay in the military because of their substantial student debt, results did not substantiate this claim. Student debt was not statistically significantly associated with intent to leave at the bivariate level. Twenty- one of the thirty-six officers who indicated they were staying in the military reported substantial student debt, while forty of the one hundred fifty-four officers who indicated they were leaving the military reported no student debt.

The fact that increasing student debt did not show a statistically significant association with intent to leave does not minimize its importance in turnover for this population. "Forgone income is a major expense of attending dental school, and no dental student undertakes such a course of action without considering the payoff. The potential earnings must be enough to overcome the huge cost of that investment" (Henderson, J.W., 2001). The influence of pay on intent to leave suggests that the 'payoff' for remaining in the military for those with student debt may be insufficient. The lack of statistical significance may be the result of the few numbers of officers with no debt in our sample population as well as the few number of officers indicating an intent to stay in the military.

Environmental Domain

(The environmental domain consists of those variables which represent constraints on intent to stay or promote intent to leave resulting from social conditions external to an organization.)

Results from this study partially substantiate the literature regarding the importance or influence of family acceptance/support on intent to leave. Previous

research conducted for the military indicate families have an influential role in the career decisions of service members (Vernez, G. &Zellman, G.L., 1987; Etheridge, R.M., 1989; Bowen, G.L., 1989). In the univariate analysis, the majority of officers reported family support as having no effect; however, bivariate analyses (binomial) revealed family support to be a statistically significant predictor for intent to leave. Only 4 of the 36 officers who reported an intent to stay indicated family acceptance made them want to stay while 79 of the 154 officers who indicated an intent to leave military service reported lack of family acceptance made them want to leave the military service. Family acceptance was not significant in either the final linear or logistic regression model.

Research on turnover has reported family acceptance as a key determinant for retention among Soldiers in the military. Published results (Mazuji et al, 2005) from the 2003 Army Junior Dental Officer Retention Survey indicated family support and acceptance had a moderating affect on the success of loan repayment programs. If the family was not supportive of the officer remaining in the military, then the data suggested that the loan repayment programs would have a minimal impact on changing that decision; if the family was supportive, the opposite was true.

Military Specific Work Conditions Domain

(Work conditions or variables specific to the military which may influence intent to leave.)

The area of research regarding military specific work conditions and their impact on intent to leave among military officers is expanding. Multiple studies published by GAO, ARI and RAND have explored the relationship between deployments, assignments, and turnover/retention. Although Price and Mueller (1981, 1986, 2001) acknowledged the importance of work conditions in their research on military organizations, they did not specifically address many of the issues which are of

contemporary concern to military officers (e.g., military lifestyle, deployment related issues, assignment related issues and respect).

Military Lifestyle

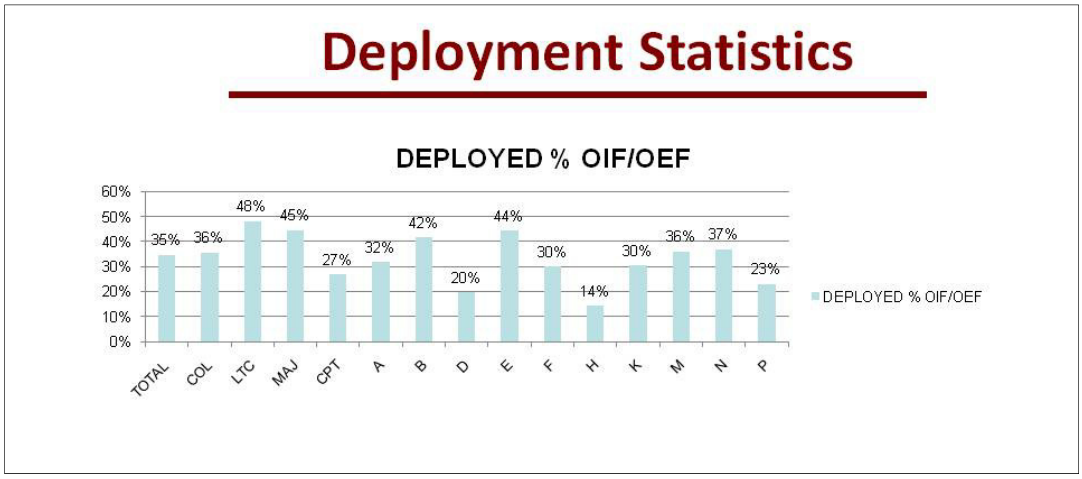
Little research has been reported on the association between military lifestyle and intent to leave. The results of our study were consistent with those of Huffman et al. (2005) who reported "among officers planning to stay in the military, general themes about why they chose to stay in the military included job satisfaction and love of the Army life." Our study revealed military lifestyle to be the most polarizing and influential predictor of intent to leave from this domain. Forty-eight percent of officers indicated military lifestyle made them want to leave the military in the univariate analysis. Results from the bivariate analysis (especially at the binomial level) illustrated the dichotomous relationship between intent to leave among "stayers" and "leavers" with 44% of those officers who indicated that they were staying reporting that military lifestyle made them want to stay while 61% of those officers who indicated an intent to leave reported military lifestyle made them want to leave. In addition, military lifestyle showed a moderate to strong correlation with intent to leave at both the trinomial and binomial levels. Military lifestyle demonstrated significance in both the linear and regression analyses and was included in the final models. Results from this study suggest that possibly prescreening Army Dental Corps applicants may assist in recruiting officers who value and appreciate military lifestyle, thus potentially enhancing retention. However, future research is needed in this area to validate this proposal.

Deployment Issues

According to the free text responses, the perception among junior officers in the Dental Corps that they have assumed the brunt of deployments compared to senior officers was not substantiated by the results of this study. Indeed, less than 30% of the respondents indicated they had been deployed in support of Operation Iraqi Freedom

(OIF) or Operation Enduring Freedom (OEF). A recent report from the Office of the Surgeon General shows that senior officers have deployed in numbers commensurate with junior officers (Figure 10).

Figure 10: Comparison of Deployments Statistics by Rank and Specialty



Bivariate analysis of history of deployment did not show a statistically significant difference in intent to leave among those that had deployed versus those that had not. In contrast, the possibility of future deployment was significant at the bivariate level. However, it was non-significant in the linear and logistic regression models. Results from previous research evaluating the impact of deployments on turnover/retention are mixed as well. While single deployments of short duration appear to have minimal impact on retention among Soldiers, increased rates of turnover have been reported among Soldiers serving either in multiple deployments or deployments of longer duration (Fricker, R.D., 2002; Huffman et al., 2005; Hosek et al.,2006).

Assignment Issues

Much of the published civilian literature assessing turnover among health care professionals has ignored the association between multiple moves (from one assignment to the next) and intent to leave. This is because for most health care professionals, including dentists, stability of location is desirable. The majority of dentists in the U.S. establish their practice in one location and remain practicing in that location until they retire. To do otherwise would not be a sound business practice for many reasons.

The findings of our study are consistent with the findings of Army studies and reports addressing the influential factors on officer retention/attrition. The Army Training and Leader Development Panel Officer Study Report to The Army (2000) concluded: "officers want predictability, stability, and more control over their assignments." The negative influence of multiple moves on retention in the military has resulted in recommendations for increased stabilization of assignments (GAO report 01-841, 2001). The multiple moves (PCS)[22] required of dental officers are part of the military lifestyle and may be partially reflected in the results for that variable. In the univariate analysis, 73% of officers reported that multiple PCS moves made them want to leave. In the bivariate analysis, current assignment and desirable assignments were weakly and negatively correlated with intent to leave. Multiple PCS moves, however, were positively and weakly correlated with intent to leave. Eighty percent of officers who reported an intent to leave indicated multiple PCS moves made them want to leave the military. However, free text comments from this survey reveal that many officers would indeed consider staying if they were left at their current location. Although attempts to increase stabilization times at assignments have not been readily noticeable among junior officers, these stabilization policies are having a positive impact on

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22 In the Department of Defense moving from one location to another is called permanent change of station (PCS)

retaining senior officers (DelaCruz, G., unpublished results from 2009 Dental Officer Retention Survey, personal communication, email Jan 27,2010). None of the issues related to assignments were statistically significantly associated with intent to leave, thus they were not included in the final models of the linear or logistic regression analyses.

Free text comments from this study indicate that the location of assignments is not as important to junior officers as the negotiation process with U.S. Army Human Resource Command. These comments are consistent with the literature. Hom and Griffeth (1995) found human resource practices serve as signals to employees about the extent to which the organization values and cares about them as individuals. Some junior officers in this survey reported they did not feel their career manager(s) at the Human Resource Command (HRC) were sensitive to their (and their family's) needs. Addressing individual officer's needs and demands for over approximately 600 junior officers can be quite challenging for career managers. It is no surprise that officers asking for assignments, as well as their career manager(s), have voiced frustration with the process.

Respect

Respect is a correlate that has not received extensive research in the turnover literature but may have been captured in the Price and Mueller model under "met expectations." It was included in the questionnaire based on free text comments from previous Army Dental Corps surveys. Dentists joining the military may have the perception and expectation that because of their rank and officer status they will enjoy a certain level of respect, especially from enlisted personnel. Free text responses from this survey indicate this expectation has not been realized. However, results from the univariate, bivariate and regression analyses indicate that lack of respect is not associated with intent to leave.

Structural Domain

(The structural domain includes variables which represent constraints on intent to leave/stay stemming from imminent conditions in the workplace (Kim, 1996).

Summary of Statistical Analyses

Descriptive statistics for variables in this domain revealed that salary, bonuses, and utilization of dental skills were among the top three reasons junior officers intend to leave the military service while benefits and autonomy were found to be among the top reasons cited for wanting to stay in the military. In contrast, the majority of respondents reported the following predictors had no effect on their intent to leave: quality of practice, professional development, promotional opportunities, mentorship and command support. In spite of the fact that a majority of respondents reported many variables had no effect on their intent to leave, all of the variables within this domain demonstrated statistical significance at the bivariate level. However, promotional opportunities, autonomy and quality of practice were not shown to be statistically significant in either regression analysis. These findings are consistent with published research which found promotional opportunities and autonomy to be weak predictors for intent to leave (Griffeth et al, 2000).

Correlation coefficients revealed benefits, utilization of dental skills and professional development to be moderately correlated with intent to stay. The relationship between benefits, utilization of dental skills, and professional development with intent to leave were validated by the regression analyses. Professional development was positively and statistically significantly associated with intent to leave in both the linear and logistic regression analyses and present in both final models. Utilization of dental skills was significantly associated with intent to leave in the final logistic model; however, it only approached statistical significance ($p=0.052$) in the final linear model.

Benefits were negatively and statistically significantly associated with intent to leave in both models.

Pay

The impact of pay on intent to stay or leave an organization is well documented in the literature. Pay can be a leading source of discontent in the workplace and result in the propensity of employees to initiate job separation if they feel they are being undercompensated (Hom and Griffeth, 1995). Univariate and bivariate results indicated that the majority of officers, regardless of their intent to leave, responded that pay made them want to leave the military. Free text responses indicated pay was the number one reason that officers were considering leaving military service. The fact that pay did not end up in the final regression models may be more a reflection of collective dissatisfaction with pay among all respondents so that the variable was not able to detect differences between pay and intent to leave.

Bonuses

The influence of bonuses on intent to leave has not been extensively researched in the civilian workforce literature until recently. Critical skills retention bonuses (Wardynski et al., 2009), and variable special pays (Griffeth and Hom, 2001) have been implemented to reward performance and promote retention among high performers. Bonuses, as we have defined them for this study, are special pays in addition to an officer's base pay, housing and subsistence allowance. Eligibility for these special pays are based on time in service, specialty training status, etc.[23] The fact that 44.9 % of

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[23] **SPECIALTY PAY**
Active Army Dental Corps Officers may be eligible for one or more of the four types of Specialty Pay. Each is paid in addition to base pay.
VARIABLE SPECIAL PAY (VSP)
Paid in monthly increments, this program provides $3,000 to $12,000 per year, based on length of service and annual rates.

officers reported bonuses had no effect on their decision to stay or leave is surprising given that such bonuses can almost equal or surpass an officer's base pay. However, the fact that bonuses were not statistically significantly associated with intent to stay by the majority of dental officers may be more a reflection that many of the junior officers were not eligible for the larger bonuses (Dental Officer Multiyear Retention Bonus). Lakhani (1988) reported quit rates to be negatively related to pay and bonuses with the effect of bonuses significantly greater for combat than noncombat Soldiers. Furthermore he reported, "the reenlistment rates of combat and noncombat personnel in the Army more clearly differ in their sensitivity to bonuses than to level of pay."

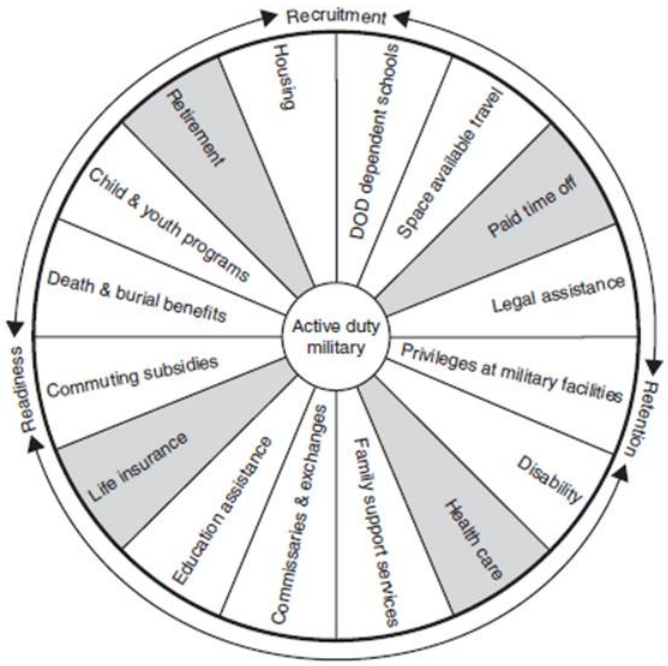
Current workforce shortages in the civilian dentist labor market result in increased opportunities for military dentists to move to that market. Experienced dental officers find themselves very marketable for attractive and lucrative civilian positions and thus are less "sensitive" to bonuses than Soldiers with less marketable skills. However, recent bonus or special pay incentives aimed at increasing the total monetary compensation for junior officers, and thereby reducing and possibly eliminating the pay gap between the civilian sector and military, is showing signs of increasing recruiting and retention in the Army Dental Corps (Office of the Surgeon General Update, DENCOM Commanders, Conference, April 29th, 2009).

BOARD CERTIFICATION PAY (BCP)
Board-certified dentists are eligible to receive $2,500 to $6,000 per year. This monthly Specialty Pay is based on length of service and annual rates.
DENTAL ADDITIONAL SPECIAL PAY (DASP)
Dental officers may qualify to receive an annual sum of $4,000 to $15,000, based on creditable service.
DENTAL OFFICER MULTI-YEAR RETENTION BONUS (DOMRB) Based on specialty and the length of contract; this Special Pay can range from $13,000 to $50,000 each year.

Benefits

Military benefits, as illustrated in Figure 11 (GAO-02-935 ActiveDutyBenefits, 2002) consist of non-pay compensation such as health care, retirement, life insurance, etc. The Government Accountability Office found in a 2002 report to Congress (GAO-02-935) that "military benefits in some cases exceed those offered by the private sector."

Figure 11: Range of Military Benefits Offered to All Active Duty Personnel



Notes:

The shaded areas of the figure indicate those benefits that are typically considered core benefits in the private sector.

This chart is not a comprehensive listing of all benefits offered to active duty military personnel.

Source: GAO-02-93-ActiveDuty Benefits, 2002

In our study, benefits were found to be the top discriminator between "leavers" and "stayers". Our study results are consistent with previous published studies. Huffman et al. (2005) concluded "among officers planning to stay in the military, general themes

about why they chose to stay in the military included personal benefits such as travel and education; and job-related benefits." In our study, officers who reported an intent to stay indicated that benefits were among the top reasons they were staying, while officers who reported an intent to leave did not. The fact that benefits were valued more by "stayers" than "leavers" may be due to the ignorance or lack of appreciation of the value of such benefits by leavers. Indeed, Hom and Griffeth (1995) found that "benefit coverage, however generous, fosters satisfaction and retention only if employees understand and appreciate their benefits." Consequently, the Army Dental Corps is currently marketing the total benefits package as part of their recruiting and retention initiatives in order to increase understanding, awareness, and appreciation for such benefits. (http://www.goarmy.com/amedd/dental/corps_benefits.jsp#active_duty).

Mentorship and Command Support

The influence of peer and supervisory support on turnover is well documented in both the civilian and military literature. A lack of peer and supervisory support has been shown to hasten intent to leave while strong peer and/or supervisory support have been shown to reduce intent to leave (Griffeth et al, 2000; Eisenberger et al., 2002; Allen et al., 2003; Price, 2004; Payne &Huffman, 2005; Maertz et al., 2007). The findings of this study indicate that both mentorship and command support have a stronger association with intent to leave among the "leavers" than the "stayers." In other words, for those who indicated an intent to stay, mentorship (25%) and command support (16.7%) were cited as reasons for staying. Among officers indicating an intent to leave, mentorship (22.1%) and command support (29.2%) were cited as reasons for leaving. Free text comments from the survey indicated that mentorship from supervisors and command support had both a positive and negative effect on individual officer's intent to leave. Some officers credited specific senior officers as being responsible for their staying in the

service, while others stated that senior officers were responsible for making the respondent leave.

The importance of mentorship and command support have been cited in military research as key issues in the retention of officers. Many mentorship programs have been formalized in an effort to enhance retention (Mentorship, Army G-1 website). In The Army Training and Leader Development Panel Officer Study Report to The Army, officers reported mentoring to be important for both personal and professional development, despite a majority of officers reporting not having mentors. Officers would like to see a greater emphasis on mentoring, but do not want formal, directed programs. The report concluded that the Army's mentoring definition and doctrine need revising. (http://www.army.mil/atld/report.pdf, p. 29).

Professional Development

Professional development, which includes specialty training, is a strong inducement to stay among junior officers as evidenced by free text comments from the survey. However, bivariate, linear and logistic regression analyses suggest that professional development is positively associated with intent to leave. This may be a reflection of increased opportunities for employment in the civilian sector for junior officers trained in a particular specialty. This is consistent with the seminal work by Becker (2007) on human capital investment. Becker found that specific training (training that an employee receives for a specific employer and generally cannot be used at a different job (i.e. sniper/Special Forces)) does not result in increased turnover. In contrast, general training (training that an employee receives that may be transferable to another job or employer) may result in increased opportunities to leave an organization, thus increasing turnover (Becker, 1962; Siebaen, 2007).

Utilization of Dental Skills

Though significant at the bivariate level, utilization of dental skills weakly (p=.052) approached statistical significance in the regression analyses. The positive correlation between under- utilization of professional/specialized skills and intent to leave (as a result of job dissatisfaction) is consistent with the literature (Ting, 1997; Beck, 2005). Free text comments, especially from officers assigned to FORSCOM field units, indicate many junior officers feel their dental skills are being underutilized. In addition, dentists new to the Army may have the expectation that they will be allowed to practice comprehensive dentistry such as they would in private practice. Many are disillusioned to learn they will only be credentialed to perform certain procedures based on evidence of formal training. For example, unless the officer has completed a one year Advanced Education in General Dentistry residency (63A 9D) or provided proof of formal training beyond dental school, he/she will not be credentialed to perform complex extractions, multi-rooted endodontic procedures, place implants, etc. In addition, officers who have been trained as 63A 9D (Advanced Education Program in General Dentistry (AEGD- 1 year program) and 63B's (Advanced Educational Program in General Dentistry (AEPGD- 2 year program) voiced frustration in free text comments with not being allowed to utilize the full range of their dental skills; rather, they were delegated to the role of "lead line"[24], Class 3[25], and sick call dentistry.

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[24] Lead line is military slang for repetitive restorative dentistry alluding to the placement of amalgam fillings which contained lead as one of the component metals.

[25] Class 3 dentistry refers to the practice of treating dental class 3 dental conditions which are defined as those conditions that are likely to result in a dental emergency within the next 12 months if not treated. Soldiers with Class 3 dental conditions often present with multiple complex restorative needs which may overwhelm young, inexperienced dental officers.

Intervening Domain

(Intervening variables are defined as those variables which mediate the relationship between the independent variables and the dependent variable, intent to leave (Price, 2001).

Job Satisfaction

While univariate analysis indicated the majority of junior officers (52.8%) to be satisfied with military dentistry, bivariate analysis revealed that dentists who indicated they were staying in the military to be more satisfied (71.4%) than those who indicated they were leaving the service (44.2%). Satisfaction with military dentistry was not significant in the regression analyses. Our findings are consistent with Lytell (2009) who found the impact of satisfaction on turnover in the military was reduced or even disappeared when other substantive variables were in the model.

Linear versus Logistic Regression Results

The final model for the linear regression analysis included the following predictor variables: unit of assignment, specialty training status (AOC), age, military lifestyle, professional development, and benefits. The final model for the logistic regression analysis included the following predictor variables: age, military lifestyle, benefits and professional development. The fact that the final models between the two regression analyses differ is predictable given that for the logistic regression an entire category of responses (maybe stay/maybe go) was eliminated when collapsing the continuous dependent variable into a dichotomous categorical dependent variable (stay vs. go). As a result seventy-seven responses from the maybe stay/maybe go category were eliminated from the logistic regression analysis. In addition, the smaller sample size for the "stayers" was only 36, which limited the number of variables which could be introduced for regression analysis. Nonetheless, it is encouraging that four of the six variables were the same between the two models, thus lending credibility to this study's results.

Comparison of Results to those Proposed by the Price and Mueller Causal Model (2001):

Although many of the variables included in the Price model were not included in this study (i.e., distributive and procedural justice, job stress, routinization, opportunity, organizational commitment, search behavior, job involvement, positive and negative affectivity), our findings were in agreement with the findings from previous studies conducted by Price. For example, Price & Kim (1996) published a study focused entirely on the relationship of demographic variables and intent to stay among military medical personnel in an Air Force hospital. They reported that education and occupational specialty are positively associated with intent to leave and age negatively associated with intent to leave. We found similar results in our study with three demographic variables (i.e., age, specialty training status, and unit of assignment) in the final linear model and one demographic variable (age) in the final logistic model demonstrating statistical significance.

Limitations of Study

Some of the limitations of this study include, but may not be limited to, the following: 1) homogeneous population; 2) sample size; 3) survey instrument; and 4) secondary data analysis. Each will be discussed in detail in the following section.

Population

Because the sample population was predominantly white, male, married junior officers in the Army Dental Corps, the results of this study may not be generalizable to other populations (e.g., other healthcare providers within the military, civilian workers). However, non-bias response testing demonstrated that respondents were similar to non-respondents within the Army Dental Corps, thus the results may be generalizable to other junior officers with the Army Dental Corps. Furthermore, dental officers within other

branches of the Armed Services (e.g., Navy, Air Force) have similar demographic characteristics, thus the results of this study may be generalizable to other military branches.

Sample Size

The sample size (n=267) was adequate for power in the trinomial and binomial bivariate analyses as well as the linear regression analysis. However, to compare logistic regression results between the "stayers" (36) and leavers (154), the smaller of the two groups restricted the introduction of more than four variables into the final model. To reduce the number of eligible variables for introduction into the final regression model, logistic regression models were conducted by domain in order to reduce the number of variables considered for the final model to only four variables. This may have potentially missed predictor variables that may have been significant in the final model that were not significant within the regression model that was run by domain. However, since the results of the final logistic regression model were similar to the final linear regression model, it is unlikely that predictor variables were missed in the final model.

Survey Instrument

The survey utilized for this study was developed by a panel of officers in the Office of the Surgeon General, Army Dental Corps Branch. In order to compare the results from the current survey to prior surveys of Army dental officers, many questions were worded in a similar manner and style to previous Dental Corps surveys rather than using validated civilian workforce models on turnover. Consequently, there were many differences between this survey and other civilian workforce studies. As mentioned previously, this study included topics that have not been examined in civilian literature, and various other topics from civilian literature were not included on this survey.

Because Army officers are frequently surveyed, the panel that developed the survey created a survey with fewer than one hundred questions in order to increase the

response rate. Consequently, the survey design introduced several challenges in the analysis and interpretation for this study. For example, single questions were used to assess predictor variables rather than utilizing multiple questions to form a composite variable. When multiple questions were used to assess a single topic (e.g.,job satisfaction see from methods), different measurement scales were used for each question, thus making it difficult to form a composite variable. Additionally, there were many free text questions that, although valuable, were difficult to code for quantitative analysis. Due to the differences in foci between this study and civilian turnover studies (i.e., topics of interest, length of surveys), the developers of the survey mainly developed their own survey rather than use reliable and valid civilian survey instruments.

Secondary Data Analysis

Many of the limitations mentioned above are the result of secondary data analysis. While secondary data analysis is an expedient way to conduct research, it does not permit the progression from formulating a research question to designing methods to answer that question. In hindsight, the trade-off of validity for expediency was a limitation to this study.

In summary, there were some limitations which compromise the generalizability, validity and reliability of our study results. In spite of the limitations of the survey utilized for this secondary data analysis, this study does provide statistical support for the conclusions based on the current and previous Dental Corps surveys as well as surveys conducted within the Department of Defense and academia. Given the constraints on survey length, but a desire to enhance the reliability and validity of survey measures, designers of future Dental Corps surveys may wish to consider consolidating the numerous single item measures on multiple issues.

Future Directions

While the Department of Defense has commissioned several in-depth studies (e.g. RAND, GAO, ARI, etc) to investigate single item issues, such as the impact of deployments, family support, OPTEMPO, and pay, on Soldier retention, future studies among military health care professionals are warranted to identify predictors of retention for critical shortage specialties (e.g., area of concentration=AOC's), especially among junior officers. Such studies should incorporate valid and reliable measures for assessing the issues found to be significant predictors for retention among this population.

Recommendations to the Army Dental Corps for Retention

Though not included in this study's statistical analyses, there were two questions (48 and 91, Appendix A) which invited free text responses and provided information on enhancing retention among junior officers. The following recommendations are based on the results from the final linear and logistic statistical analyses from our study and confirmed by free text responses from these questions.

Military Compensation

Pay and Bonuses

Though not significant in the final regression models, the collective dissatisfaction with pay and bonuses among junior officers is apparent from the univariate analyses and free text comments in this survey. Such dissatisfaction has not gone unnoticed by the leadership of the Army Dental Corps. The Office of the Surgeon General has introduced several pay initiatives (bonuses) to increase compensation at the junior officer level so that total monetary compensation is competitive with the civilian sector. The leadership should continue to assess the influence of such initiatives on retention among junior officers.

Benefits

According the General Accountability Office (GAO-10-666T, April, 2010), military benefits equal or surpass those offered in the civilian sector. However, many potential recruits and junior officers do not appreciate the value of these benefits. The Army Recruiting Command and the Army Dental Corps should continue their efforts to market military benefits as part of their recruiting and retention initiatives.

Military Assignments

Unit of Assignment

The fact that unit of assignment was significant in the final regression analyses indicates that the leadership may want to conduct future research into this area. Based on free text comments, junior officers do not appreciate or value being assigned to FORSCOM Basic Combat Teams (BCTs) because: 1) they feel their dental skills degrade from lack of clinic time; 2) they feel disenfranchised from the Dental Command (DENCOM); and 3) they feel they are their contributions are not reflected in their Officer Evaluation Reports by their BCT leadership.

Assignment Process

Free text responses indicated that officers felt they had little input into the assignment process. Assignment stabilization, especially for junior officers with employed spouses and school age children, is important. Many officers expressed dissatisfaction at what they perceived to be Human Resource Command's (HRC) apparent disregard for their family (and extended family) in the assignment process. Based on feedback from junior officers, personnel changes at the Human Resource Command have been implemented to improve communication between HRC and junior officers. The Army leadership should continue to assess the relationship between the assignment process and retention.

Military Lifestyle

Based on the statistical results from this survey, military lifestyle is associated with an officer's decision to stay or leave. Collective dissatisfaction with certain aspects of the military lifestyle has resulted in changes being made at the Department of Defense to improve military lifestyle, such as: increasing stabilization times, reducing deployment times, increasing child care support, etc. However, some aspects of the military lifestyle are immutable, and they are either appreciated by service members or they are not. Based on this survey it may be of some value for the United States Army Recruiting Command to introduce "person-fit" screening tests in their scholarship and direct commissioning application packages

Results from this survey indicate that personality, and especially the role of expectations, play a significant part in retention. In other words, some applicants are more predisposed than others to making the Army a career. Free text responses indicated that many junior officers were second and third generation Dental Corps officers. These officers possibly enter military service with more realistic expectations than their peers with no prior family history of military service. In addition, results from this study revealed two statistically significant discriminators for intent to leave: benefits and military lifestyle. Officers who valued the military benefits were less likely to report an intent to leave than those that did not. Officers who understood and appreciated the military lifestyle were less likely to report intent to leave than those who did not. For these reasons, screening of applicants through person-organization fit screening tools should reveal those officers who value and appreciate military benefits and lifestyle.

Officer Retention Surveys

Recent and successful initiatives to improve retention among junior officers are in part due to feedback from annual Dental Corps Officer Retention Surveys. Such surveys provide valuable and timely feedback from junior officers and give senior leadership a

feel for the pulse of junior officers. In the future, the Army Dental Corps leadership may wish to modify the survey to include measures which enhance the reliability and validity of statistical analyses.

Summary

The Army Dental Corps has been aggressively pursuing initiatives and policies which enhance recruitment and retention among junior officers. Such initiatives are the result of previous Dental Corps Retention Surveys and direct communication between junior officers and the Army leadership through various venues (junior officer week, quarterly video-teleconferences conducted by the Chief of the Corps and junior officers, representation of junior officers on the Dental Corps strategic planning committees, etc). Recent initiatives to enhance recruiting and retention appear to be effective, but continual assessment is required. Future assessments should include annual Officer Retention Surveys which incorporate valid and reliable statistical measures.

CHAPTER 6

CONCLUSION

Our overall findings are consistent with the literature, which concluded that retention is a multi-factorial issue based on individual decisions. Our findings support the findings from a 2002 CRS report on retention and recruiting to Congress:

> "Aggregate retention rates in the military are the product of thousands of individual decisions on whether or not to stay in the military. These individual decisions, analysts believe, are based on the individual's answer to one basic question: "Would I be better off if I stayed in or left the military?" The question, while simple to state, can be an extraordinarily complex one to answer, as the definition of "better off" entails a broad array of factors including pay and benefits, job satisfaction, and quality of life. Some of these factors, like pay, are tangible and can be quantified and compared with civilian jobs. Others, like quality of life, are less tangible and can be very difficult or impossible to quantify and compare with civilian life. Additionally, different individuals attach different levels of importance to these various factors. Given the exact same environment, the answer to the question "Would I be better off if I stayed in or left the military?" will be answered differently by different people depending on their personal priorities. Thus, it is impossible to identify some sort of objective "tipping point" that leads military personnel to decide for or against continued service" (Kapp, 2002).

We anticipate our findings, which confirm and expand on the findings from previous Army Dental Corps surveys, will assist the leadership in their current efforts to implement and sustain policies which enhance retention. Specifically, these policies should: 1) promote and market total military compensation, 2) enhance communication in the assignment process, and 3) ameliorate the negative aspects of military lifestyle.

We believe our findings, which are the first to be based on in-depth statistical analyses of survey data for this population of junior Army officers, may be beneficial in addressing similar retention issues for the Air Force and Navy Dental Corps.

APPENDIX A

2009 DENTAL OFFICER RETENTION SURVEY

Please help us to understand the factors that motivate your career decisions. The results will help us work towards improving opportunities for you and your colleagues. This information will not affect your military career. Only summary results will be shared with Army leaders.
Please do **not** put your name on this survey.
Thanks for your help.

PART 1: ASSIGNMENTS AND DEPLOYMENTS

1. What type of unit are you currently assigned to? Please select from the following.

- FORSCOM BCT: If assigned to a Brigade Combat Team (BCT)
- FORSCOM DENTAL: If assigned to MTOE Dental Company
- FORSCOM OTHER: If assigned to some other FORSCOM unit.
- TRAINING: if currently in a residency, fellowship or other training program; does not include TDY training.
- LARGE DENTAC: DENTAC at Ft Bragg, Ft Benning, Ft Campbell Korea, Ft Bliss, Ft Carson or Ft Stewart
- MEDIUM DENTAC: DENTAC at Ft Jackson, Ft Sam Houston, Ft Wainwright, , Ft Knox, Ft Eustis, West Point, Landstuhl, Ft Riley, Ft Sill, Ft Drum, Ft Meade, Bavaria or Ft Leonard Wood.
- SMALL DENTAC/CLINIC COMMAND: DENTAC or Clinic Command at Ft Polk, Ft Lee, CP Zama, Ft Richardson, Wiesbaden, Katterbach, Carlisle Barracks, Ft Huachuca, Ft McPherson, Presidio, Aberdeen PG, Vincenza, Shape, Ft Irwin, Ft Rucker, Baumholder, Ft Leavenworth or Stugart
- OTHER: if assigned to a Regional Dental Command HQ, DENCOM HQ, CSBPO, OTSG or other non-clinical assignment not covered by other categories.

[coded numerically in same order above]

2. What is your current time on station?

- 6 months or less
- 7 to 12 months
- 13 to 23 months
- 2 years
- 3 years
- 4 years or more

[coded numerically in same order above]

3. Are you currently deployed?

-Yes

4. Since September 2001, how many **total** months have you been deployed in support of OEF/OIF?

- None - I have not been deployed in support of OEF/OIF
- 6 months or less
- 7 to 12 months
- 13 to 18 months
- 19 to 24 months
- More than 24 months

[coded numerically in same order above]

5. What do you think is a realistic duration for Army Dental Corps Officers to be deployed so as not to affect retention?

- 3 months or less
- 4 to 6 months
- 7 to 12 months
- 13 to 18 months
- 19 to 24 months

[coded numerically in same order above]

6. If you were deployed as a PROFIS officer or Brigade dentist, please describe your experience with the unit that you were assigned to?

- N/A - I have never been deployed as a PROFIS officer or Brigade dentist
- The unit that I was assigned to treated me well
- The unit treated me well in general, but I had a few problems
- The unit treated me somewhat poorly
- The unit treated me very poorly

[coded numerically in same order above]

7. How satisfied were you with the amount and frequency of information that you received regarding Army Dental news and issues while deployed?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied	N/A – not deployed
1	2	3	4	5	6

PART 2: RETENTION AND RECRUITING

8. How satisfied are you with dentistry as a career?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied
1	2	3	4	5

9. If you are planning on leaving the Army before retirement will it be (estimate):

- N/A I plan on staying until retirement
- Upon completion of my initial tour
- If not on initial tour then after my current obligation
- After specialty training and payback
- At least one year beyond my current obligation but not to retirement
- Not sure

[coded numerically in same order above]

Rank the following according to which is most important to keeping you on Active Duty, with 1 being the highest and 10 being the lowest. *Be sure to use each number only once unless you hold items **equally important**.*

10. Retirement benefits
11. Dental bonuses (pay)
12. Specialty Training
13. Duty location of my choice
14. Quality of practice
15. Promotion opportunities
16. Leadership or Command opportunities
17. Staff opportunities (OTSG, DENCOM, HRC, USAREC, etc.)
18. Family benefits (healthcare, child care, recreation, etc.)
19. Other? (if other, please describe below)

Other factor is important to keeping you on Active Duty, if any

Rate whether the following factors make you want to stay in the military or make you want to get out.

Stay	**Maybe Stay**	**No effect**	**Maybe Go**	**Go**
+ +	+	**0**	-	- -
1	2	3	4	5

20. Total salary
21. Dental Bonuses
22. Promotion opportunities
23. Professional development
24. Continuing Education
25. Residency/specialty training opportunities
26. Mentorship (quality of contemporaries and superiors)
27. Quality of Practice
28. Dental lab support
29. Utilization of dental skills
30. Respect from civilian clinical/support staff

31. Respect from NCOs/Enlisted
32. Respect from supervisor/senior officers
33. Military training (airborne, air assault, special forces, etc.)
34. Sense of duty/patriotism
35. Esprit de Corps
36. Military lifestyle
37. Experience during deployment
38. Possibility of future deployment (war, peacekeeping, etc.)
39. Availability of desirable military duty assignments
40. Current military duty assignment
41. Travel/living overseas
42. Time away from home
43. Frequency of moves (PCS)
44. Family acceptance
45. Opportunities for spouse employment or spouse's career progression
46. Balance between work and personal/family time
47. Command support for family or personal needs

48. What one thing could the Army Dental Care System do to keep you in the military?

List **your** top two reasons for entering the Dental Corps:

49. Your #1 reason

50. Your #2 reason

Rank the following according to which you think is most important in recruiting **NEW** Army dentists (not necessarily what made you join). *Be sure to use each number only once unless you hold items equally important.*

51. Loan Repayment
52. HPSP scholarships
53. Sign on Bonus
54. Retention Bonus
55. Specialty Training
56. AEGD-12 month training programs
57. Mentorship in group practice
58. Choice of assignment location
59. Economic stability
60. Travel opportunities

PART 3: INCOME AND INDEBTEDNESS

61. Which of the following most closely resembles your opinion on the importance of pay in retaining you on Active Duty?

- Pay is the ONLY factor
- Pay is the most influential item for me, but other items are important too
- Pay is important, but other issues such as quality of life and practice are equally important
- Issues such as quality of life and practice are most influential, but pay is still important
- Pay is not influential at all

[coded numerically in same order above]

62. Please select the choice that **Best** describes your experience with off-duty employment ("moonlighting" or working in a civilian job while on active duty):

Never moonlighted
Moonlighted for essential income supplementation
Moonlighted for extra discretionary income
Moonlighted to maintain my dental skills
Moonlighted to help transition to private practice
Other (if other, please describe below)

If other reason for off-duty employment, please describe here.

[coded numerically in same order above]

63. Please describe your spouse's employment status (includes self-employed)

N/A – Not married
Spouse not employed – not seeking employment
Spouse not employed – seeking employment but cannot find work
Spouse employed – extra discretionary income
Spouse employed – essential income or professional career
Spouse is in the Army
Spouse is in some other branch of service

[coded numerically in same order above]

64. If pay is a strong influential factor in your decision to remain in the Army, how much of a yearly salary increase would realistically keep you on Active Duty? (FREE TEXT)

1. N/A - Pay is not influential
2. $10-20,000 per year
3. $20-30,000 per year
4. $30-40,000 per year
5. More than $40,000 per year

[coded numerically in same order above]

65. If you were a recipient of an HPSP Scholarship, how many years was the scholarship for? (Coded 1-4 and N/A, I did not receive an HPSP Scholarship)
[coded numerically in same order above]

66. If you were a recipient of HLRP, how many years was the repayment for? (Coded 1-4 and N/A, I did not receive HLRP)
[coded numerically in same order above]

67. If you were the recipient of a Direct Accession Bonus, how much was the bonus (to nearest $1000)?

If you currently have outstanding student loans, please enter the amounts below (to nearest $1000).

68. Undergraduate / College / University:
69. Graduate / Dental School / Post Doctoral:

PART 4: TRAINING AND UTILIZATION

70. Please choose the option that best describes your experience with the "Advanced Education in General Dentistry (AEGD)12-Month Program"?
- I have not completed a 12-Month Program
- I completed a 12-Month Program, and would recommend it to new dentists
- I completed a 12-Month Program, but I may or may not recommend it to new dentists
- I completed a 12-Month Program but would NOT recommend it to new dentists

[coded numerically in same order above]

71. Which of the following applies to you in regards to specialty training?
- I have completed specialty training
- I am currently in a training program
- I have been accepted to a program
- I am currently interested in or applying to a program
- I am NOT interested in specialty training

[coded numerically in same order above]

72. To what extent do you utilize the full scope of your dental training in your current assignment?

Extensively	Fairly well	Somewhat	Hardly at all	Not at all
1	2	3	4	5

73. How satisfied are you with the degree of utilization of your full range of dental skills in your current assignment?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied
1	2	3	4	5

74. How satisfied are you with your freedom to utilize your professional judgment and training when formulating treatment plans or providing clinical care?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied	N/A
1	2	3	4	5	6

75. How satisfied are you with the quality and availability of clinical equipment that is necessary to provide effective/efficient patient treatment?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied	N/A
1	2	3	4	5	6

PART 5: IMPRESSION OF LOCAL LEADERSHIP

76. How strong/effective do you feel the leadership is at your local (clinic or unit) level?

Very Effective	Effective	Neutral/Not sure	Poor	Very Poor
1	2	3	4	5

77. How much concern do you feel your local leadership (Clinic Chief/ Commander) has for you as an individual?

A Great Deal	Some	Neutral/Not sure	Very Little	None or Nearly None
1	2	3	4	5

78. How well does your local leadership (Clinic Chief/ Commander) allow flexibility to deal with family or personal needs?

Very Well	Fairly Well	Neutral/Not sure	Not Very Well	Not Well At All
1	2	3	4	5

79. How well do you feel your local leadership keeps you informed about current events in the Dental Corps?

Very Well	Fairly Well	Neutral/Not sure	Not Very Well	Not Well At All
1	2	3	4	5

80. How much concern do you feel your local leadership has about retaining Officers with your number of years of service?

A Great Deal	Some	Neutral/Not sure	Very Little	None or Nearly None
1	2	3	4	5

81. How satisfied are you with your degree of involvement in the decision-making processes for local policies and procedures that affect you?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied
1	2	3	4	5

PART 6: IMPRESSION OF SENIOR LEADERSHIP

82. How strong/effective do you feel your senior leadership (Corps Chief, DENCOM) is?

Very Effective	Effective	Neutral/Not sure	Poor	Very Poor
1	2	3	4	5

83. How much awareness do you feel senior leadership (Corps Chief, DENCOM) has of Officer retention issues?

A Great Deal	Some	Neutral/Not sure	Very Little	None or Nearly None
1	2	3	4	5

84. How much concern do you feel the Senior leadership has about retaining Officers with your number of years of service?

A Great Deal	Some	Neutral/Not sure	Very Little	None or Nearly None
1	2	3	4	5

85. How actively do you feel Senior leadership is working to address the issues raised in this survey?

Very Actively	Fairly Actively	Neutral/Not sure	Not Very Actively	Not Actively At All
1	2	3	4	5

PART 7: DEMOGRAPHIC INFORMATION

86. Sex:
Male
Female

87. What is your race? *(check all that apply)*
____ American Indian or Alaska Native
____ Asian or Pacific Islander
____ Black or African American
____ White
____ Hispanic or Latino
[coded numerically in same order as above]

Age:
What is your age in years?
18-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
Greater than 60
[coded numerically in same order as above]

88. Rank:
O3
O4
O5
O6+

89. AOC:

1. 63A
2. 63B
3. 63D
4. 63E
5. 63F
6. 63H
7. 63K
8. 63M
9. 63N
10. 63P

90. What year did you enter the DC on Active Duty. Please use a 4-digit year.

91. Do you have any comments or issues that were not addressed in this survey?)

APPENDIX B

RECODE OF SURVEY QUESTIONS

Recode of Questions 4

4. Since September 2001, how many total months have you been deployed in support of OEF/OIF?

a)- None - I have not been deployed in support of OEF/OIF

b)- 6 months or less

c)- 7 to 12 months

d)- 13 to 18 months

e) 19 to 24 months

f) More than 24 months

Question (4) see below was recoded to a new binomial variable

0 Never deployed in support of OIF/OEF=a

1 Ever deployed in support of OIF/OEF=b-f

Recode of Questions 10 - 18

Survey participants were asked to rank numerous 9 factors suspected to influence retention to include retirement benefits (question 10) and family benefits (question 18) as to their importance in keeping the officer on active duty (instead of getting out) with1 being the highest and 9 being the lowest. Respondents were not allowed to use the same number twice. Individual means for each factor were calculated, summed and added together then divided by two to provide a composite score for a new recoded variable, benefits. Items 10 - 18 were recoded as follows:

0= Benefits were NOT top 1 or 2 choices
1= Benefits were in top 1 or 2 choices

Recode of questions 20-47

An entire block of survey questions of assessing predictor variables in the pre-entry, environmental, structural, and military work condition domains were originally coded on a five point likert-type scale (Figure xx). To facilitate statistical analysis, questions 20 -47 were collapsed from a five point likert-type scale to a 3 point likert-type scale.

Stay	Maybe stay	No effect	Maybe go	Go
+ +	+	0	-	- -
1	2	3	4	5

New Value **Original Value**
1=stay; **1=stay, 2=maybe stay**
2= no effect **0= no effect**
3= leave **4=maybe go, 5=go**

Recode of question 65 and 66

To measure whether the respondent entered the service because of a prior obligation or incurred as obligation on upon entering the free text responses from question 65 and 66 were recoded into two categorical variables. . Then those respondents who indicated either they incurred a loan repayment or scholarship/ obligation were recoded and computed into a new variable called obligation

0= no obligation
1= obligation

Recode of question 68 and 69

Total debt was calculated by combining individual responses from free text responses for questions 68 and 69. These responses were then recoded into 4 categories (ranges of debt). The categories and codes are provided below.

0= No deb

1=$1500-$50,000

2=$51,000-$100,

3=$101,000-$336,000

Recode of questions 73-75

The relationship between an officer's perceived job satisfaction and intent to leave is measured by the 3 items listed below. NA responses on questions 74 and 75 were recoded to neutral responses so that the 3 questions (74, 75, and 75) utilized the same 5 point likert scale.

73. How satisfied are you with the degree of utilization of your full range of dental skills in your current assignment?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied
1	2	3	4	5

74. How satisfied are you with your freedom to utilize your professional judgment and training when formulating treatment plans or providing clinical care?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied	N/A
1	2	3	4	5	6

75. How satisfied are you with the quality and availability of clinical equipment that is necessary to provide effective/efficient patient treatment?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied	**N**/A
1	2	3	4	5	6

Later these 3 questions were collapsed into a three point likert-type scale . The recoded variables were totaled together and divided by 3 to obtain a composite measure for satisfaction.

New Values	Original Values
1= Satisfied	Extremely satisfied =1; Satisfied=2
2= No effect	Neutral=3
3= Dissatisfied	Unsatisfied=4; Extremely unsatisfied=5

81. How satisfied are you with your degree of involvement in the decision-making processes for local policies and procedures that affect you?

Extremely Satisfied	Satisfied	Neutral	Unsatisfied	Extremely Unsatisfied
1	2	3	4	5

Question 81 was collapsed from a 5 point likert scale to a 3 point likert scale as shown below:

New Values	Original Values
1= Satisfied	Extremely satisfied =1; Satisfied=2
2= No effect	Neutral=3
3= Dissatisfied	Unsatisfied=4; Extremely unsatisfied=5

Recode of Demographic Variables

Unit of Assignment

1. What type of unit are you currently assigned to? Please select from the following.

1- FORSCOM BCT: If assigned to a Brigade Combat Team (BCT)

2- FORSCOM DENTAL: If assigned to MTOE Dental Company

3- FORSCOM OTHER: If assigned to some other FORSCOM unit.

4- TRAINING: if currently in a residency, fellowship or other training program; does not include TDY training.

5- LARGE DENTAC: DENTAC at Ft Bragg, Ft Benning, Ft Campbell, Korea, Ft Bliss, Ft Carson or Ft Stewart

6- MEDIUM DENTAC: DENTAC at Ft Jackson, Ft Sam Houston, Ft Wainwright, , Ft Knox, Ft Eustis, West Point, Landstuhl, Ft Riley, Ft Sill, Ft Drum, Ft Meade, Bavaria or Ft Leonard Wood.

7- SMALL DENTAC/CLINIC COMMAND: DENTAC or Clinic Command at Ft Polk, Ft Lee, CP Zama, Ft Richardson, Wiesbaden, Katterbach, Carlisle Barracks, Ft Huachuca, Ft McPherson, Presidio, Aberdeen PG, Vincenza, Shape, Ft Irwin, Ft Rucker, Baumholder, Ft Leavenworth or Stugart

8- OTHER: if assigned to a Regional Dental Command HQ, DENCOM HQ, CSBPO, OTSG or other non-clinical assignment not covered by other categories.

Recoded to:

1-3 recoded to 1 = FORSCOM

4 recoded to 2= Training

5-7 recoded to3= DENTAC

8 recoded to 4= other (DENCOM, AMEDD C&S, OTSG,etc)

63. Please describe your spouse's employment status (includes self-employed)

N/A – Not married (1)

Spouse not employed – not seeking employment(2)

Spouse not employed – seeking employment but cannot find work(3)

Spouse employed – extra discretionary income (4)

Spouse employed – essential income or professional career (5)

Spouse is in the Army (6)

Spouse is in some other branch of service (7)

New value	Originial Value
0=not married	1
1= married	2-7

87. What is your race? *(check all that apply)*

____ American Indian or Alaska Native (1)

____ Asian or Pacific Islander (2)

____ Black or African American (3)

____ White (4)

____ Hispanic or Latino (5)

[coded numerically in same order as above]

New value	Original value:
1= white	4
2= nonwhite	1,2, 3, 5

89. Area of Concentration (AOC):

1. 63A (1)
2. 63B (2)
3. 63D (3)
4. 63E (4)
5. 63F (5)
6. 63H (6)
7. 63K (7)
8. 63M(8)
9. 63N(9)
10. 63P(10)

Specialty training status Recoded to;

New value	Original Value
0= General dentist	1 (63A)
1= Comprehensive dentist	2 (63B)
2= all other specialties	3-10

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